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ABSTRACT

These student materials are designed to accompany the Career Opportunities Instructional Guide. Page numbers are consistent with the numbering in that guide. Seventeen units are provided. The materials in Unit 1 concern aspects of locating information about occupations; Unit 2 provides an introduction to the 15 occupational clusters. Each of the remaining units deals with one of the 15 clusters: agribusiness and natural resources; business and office; communications and media; construction; consumer and homemaking; environment; fine arts and humanities; health; hospitality and recreation; manufacturing; marine science; marketing and distribution; personal services; public services; and transportation. Each unit consists of three components: information sheets, activity sheets, and unit test. The information sheet on specific occupational clusters contains the following items: definition, list of job families and definitions, and examples of occupations with Dictionary of Occupational Titles number. (YLB)

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Career Opportunities Instructional Guide

Student Materials

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NOTE: Page numbers are consistent with the numbering found in the Instructional Guide.

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
INFORMATION SHEET 1—TERMS AND DEFINITIONS

1. Advancement—being promoted to a higher position
2. Employment outlook—how the future looks for an occupation
3. Job description—the details (usually written) of a job; what the job tasks are, what equipment is involved, etc.
4. Resource—any thing, person, or action to which you may turn in time of need
5. Salary—a fixed amount of money paid at regular times, such as once a month, for work done

   (**NOTE**: The terms **wage** or **wages** are usually used when money is paid to an employee at regular times, such as at a rate for each hour worked. This is especially true for skilled labor (work with the hands). The term **salary** is used for fixed amounts usually paid once or twice each month. The word **pay** or **earnings** can be used in place of either **wages** or **salary**.)

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
ACTIVITY SHEET 1—USING TERMS TO MAKE SENTENCES

Directions: Make five sentences, using one of the following terms in each sentence.

advancement
job description
employment outlook
resource
salary

1.

2.

3.

4.

5.

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
INFORMATION SHEET 2—WHAT IS OUT THERE

I. Why You Need to Know How to Use Career Resources That Are Available

  A. As you become aware of different occupations, you will want to know more about them.

  B. To save time, you will want to know what type of information each resource will provide.

II. The *Dictionary of Occupational Titles* (DOT) Can Assist You If:

  A. You know a name or title for the occupation but can't find any information using that title

    1. Many times, occupations have more than one title.

    2. The 1977 edition of the *Dictionary of Occupational Titles* has an Index of Occupational Titles listed in alphabetical order on pages 965-1156.

      a. Once you find the *D.O.T. number, you can locate the information concerning the occupation.*

      b. The *D.O.T.* lists alternate job titles for occupations.

      c. The *D.O.T.* also lists closely related occupations.

  B. You want to know what industry or industries in which an occupation would be used

C. You want to know the job description of an occupation

D. You want to know the meanings of technical terms commonly used in describing occupations

(**NOTE:** Because the meanings of technical words often differ from common usage as shown in a standard dictionary, a Glossary of Technical Terms is provided in the 1977 edition of the *D.O.T.* on pages 947-963.)

III. The *Occupational Outlook Handbook* Can Assist You If:

A. You want to know the nature of work for an occupation

B. You want to know what the places of employment are for an occupation

C. You want to know what training is needed, what qualifications are required, and what the chances are for advancement for a certain occupation

D. You want to know the employment outlook for an occupation

E. You want to know the earnings and working conditions for an occupation

F. You want to know where to look for more information about an occupation

IV. The State Occupational Information Coordinating Committee (S.O.I.C.C.) Hotline can assist you if:

A. You want to request career opportunities information

1. A 24-hour toll-free telephone number is available, 1-800-822-PLAN
2. Materials will be mailed within a few days at no charge to caller.
3. Information on up to three specific occupations may be requested.

B. You want additional information

1. Financial assistance and admission information for college
2. Trade and technical school information
3. Tips for job applications, resumes, and interviews

        4. Job forecasts and projections

V. Additional Resources
    A. Chamber of Commerce
    B. Places of employment
    C. State Employment Commission
    D. People currently in the career
    E. Professional organizations and journals
    F. Career briefs
    G. Computer information systems (often in counselor's office)

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
ACTIVITY SHEET 2—NAMING OCCUPATIONS

Directions: Use the Index of Occupational Titles found on pages 965-1156 of the *Dictionary of Occupational Titles* to assist you in naming five occupations that begin with the following letters:

A 1. 2. 3. 4. 5.	**B** 1. 2. 3. 4. 5.	**C** 1. 2. 3. 4. 5.	**D** 1. 2. 3. 4. 5.	**E** 1. 2. 3. 4. 5.
F 1. 2. 3. 4. 5.	**G** 1. 2. 3. 4. 5.	**H** 1. 2. 3. 4. 5.	**I** 1. 2. 3. 4. 5.	**J** 1. 2. 3. 4. 5.
K 1. 2. 3. 4. 5.	**L** 1. 2. 3. 4. 5.	**M** 1. 2. 3. 4. 5.	**N** 1. 2. 3. 4. 5.	**O** 1. 2. 3. 4. 5.
P 1. 2. 3. 4. 5.	**Q** 1. 2. 3. 4. 5.	**R** 1. 2. 3. 4. 5.	**S** 1. 2. 3. 4. 5.	**T** 1. 2. 3. 4. 5.
U 1. 2. 3. 4. 5.	**V** 1. 2. 3. 4. 5.	**W** 1. 2. 3. 4. 5.	**X** 1. 2. 3. 4. 5.	**Y** 1. 2. 3. 4. 5. **Z** 1. 2. 3. 4. 5.

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS

ACTIVITY SHEET 3—THE STANDARD DICTIONARY DOESN'T ALWAYS HELP!

Directions: When using career resources to locate information about occupations of interest, you often will find words that you do not know. If you use a standard dictionary to find out what the definitions of the words are, you will find that, many times, the definitions do not make sense. Use the Glossary of Technical Terms in the *Dictionary of Occupational Titles* to find the definitions of the following words:

1. Choker -

2. Cheese -

3. Doctor -

4. Donkey Watch -

5. Grizzly -

6. Jolly -

7. Palm -

8. Rapping -

9. Seed -

10. Worm -

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
ACTIVITY SHEET 4—REPORTING OCCUPATIONS

Directions: Use all available resources to find out about the occupation____________________________. Prepare a report using the following outline as a guide:

I. **Nature of Work**

II. **Working Conditions**

III. **Education and/or Training**

IV. **Other Qualifications**

V. **Chances for Advancement**

VI. **Job Outlook**

VII. **Earnings**

VIII. **Related Occupations**

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
UNIT TEST—PART 1

Match the following terms and definitions by placing the correct letter in the blanks at the left.

______1. Resource

______2. Advancement

______3. Employment outlook

______4. Job description

______5. Salary

a. the specific duties (usually written) of a job

b. a fixed amount of money paid at regular times for work done

c. being promoted to a higher position

d. how the future looks for an occupation

e. any thing, person, or action to which you may turn in time of need

UNIT I

LOCATING INFORMATION ABOUT OCCUPATIONS
UNIT TEST—PART 2

A. Explain in your own words why you need to know how to use career resources:

B. Fill in the blanks by using the words listed below to complete the following sentences:

(**NOTE:** Some terms may be used more than once; some terms may not be used.)

one
Glossary of Technical Terms, *D.O.T.*
Alphabetical Index of Occupational Title, D.O.T.
Occupational Outlook Handbook

three
Dictionary of Occupational Titles
Index of Terms
State Occupational Information Coordinating Committee Hot Line
State Occupational Information Coordinating Committee

1. If you know a name or title of an occupation but you can't locate any information using that name or title, you would first use the______________________________to locate the occupation's number and then see if there are other titles mentioned.
2. If you want to know the nature of work for an occupation, other than a general job description, you would use the________________ ______________________________.
3. If you want to know the places of employment for an occupation, you would use the ______________________________.
4. If you want to know the job description for a certain occupation, you would use the ______________________________.

5. If you want to know the meanings of technical terms found in career resources, you would use the ____________________ found in the *Dictionary of Occupational Titles.*

6. If you want to know the employment outlook for an occupation, you would use the ____________________.

7. If you want to have career opportunities information sent to you be mail you would use ____________________.

8. If you want to know what training is needed, the qualifications required, and what the chances for advancement are for an occupation, you would use the ____________________.

9. If you want to know the earnings and working conditions for an occupation, you would use the ____________________.

10. If you want to know where to look for additional information about an occupation, you would use the ____________________.

11. If you want to know what industry or industries in which an occupation would fit, you would use the ____________________.

12. If you want job information, college admission and financial aid information, and information about interviews and resumes use the ____________________.

13. Many times, occupations have more than ____________________ title(s).

14. If you dial 1-800-822-PLAN, you'll reach the ____________________.

15. S.O.I.C.C. is the acronym for the ____________________.

C. Name three additional career information resources (other than the *Dictionary of Occupational Titles* and *Occupational Outlook Handbook*) which would provide you information about occupations.

1.

2.

3.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

INFORMATION SHEET 1—TERMS AND DEFINITIONS

1. Cluster—together because of a likeness
2. Culture—the ideas, skills, arts, tools, and way of life of certain people in a certain time
3. Moral—standard of what is good or right in the way one lives
4. Raw material—those things that exist in their natural state; those things not changed by some human process
5. Social—of or having to do with human beings as they live together in a group or groups

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 1—UNSCRAMBLING TERMS

Unscramble the following terms:

1. Those things that exist in their natural state; those things not changed by some human process

   wra smaarietl______________ _______________

2. Together because of a likeness

   rsetluc_____________________________

3. Standard of what is good or right in the way one lives

   romla_____________________________

4. Of or having to do with human beings as they live together in a group or groups

   csolai_____________________________

5. The ideas, skills, arts, tools, and way of life of certain people in a certain time

   lcetruu_____________________________

UNIT II

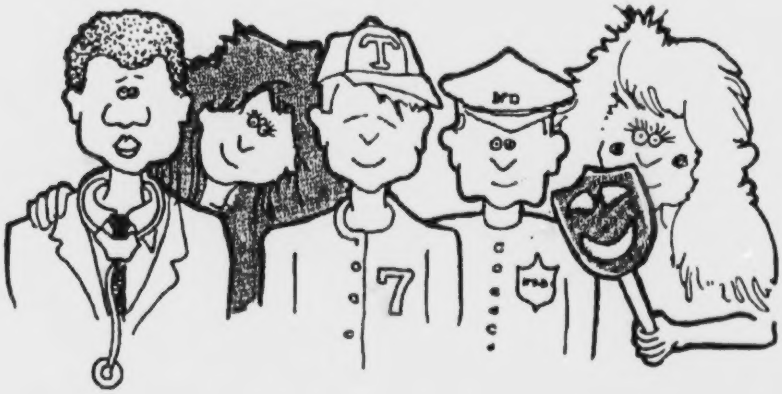
INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

INFORMATION SHEET 2—THE CLUSTERS APPROACH

I. What Is Meant by the Clusters Approach?

A. Most of you, when asked to think of as many occupations as you can, will think of only those occupations with which you have observed in some manner during your life.

EXAMPLES: Doctors, police officers, professional athletes, models, actors/actresses, etc.



B. Many occupations are in the world of work with which you have not come in contact.

1. The *Dictionary of Occupational Titles* lists over 20,000 occupations.

2. Where you live and what you do, influence the occupations with which you come in contact.

3. The rapid changes in technology are creating new occupations, deleting occupations, and changing the job tasks of many occupations.

C. It is impossible for anyone to recall the titles of **all** the occupations that exist.

1. In order to achieve a broad understanding of the world of work, there must be a means of placing similar, or "like" occupations into groups to help in understanding and investigating occupations.

2. The cluster classification system groups "like" occupations to form a cluster.

D. The term **occupational cluster** has taken on a variety of meanings.

1. The type of job cluster system developed depends upon the purposes and requirements of those doing the clustering.

2. Occupations may be grouped to form a cluster because they are considered alike based upon producing similar job products, the nature of the work, the job knowledge required, the job location related to the occupation, etc.

E. Occupations can often be placed in more than one cluster.

EXAMPLES: Landscape architect can be placed in the Agri-Business and Natural Resources Cluster or the Environment Cluster; flight attendant can be placed in the Hospitality and Recreation Cluster or the Transportation Cluster.

F. Occupations requiring different levels of education/training can be found within each cluster.

II. The cluster approach to classifying occupations can help you with your career decision making.

A. It helps you in discovering occupations you did not know existed.

B. By discovering more occupations, you are more likely to find the career that is right for you.

C. If for some reason you are unable to pursue the occupation that interests you, do not give up; you will often find very similar occupations within the same cluster.

EXAMPLE: Robbie has the interest and aptitudes needed to be a successful doctor. As you know, it takes many years to become a doctor. Robbie was undecided until she found several careers listed in the health cluster that had job tasks similar to what a doctor would do. Robbie is now working toward a career as an emergency medical technician.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 2—HOW MANY DO YOU KNOW?

Directions: List as many occupations as you can think of below.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

INFORMATION SHEET 3—THE FIFTEEN OCCUPATIONAL CLUSTERS

Agri-Business and Natural Resources—It is a group of occupations involved in getting raw materials from the earth; regulated by the U.S. Department of Agriculture.

Business and Office—It is a group of occupations involved in recording and processing of data in business offices.

Communications and Media—It is a group of occupations involved in the preparation and presentation of oral or written communications to the public.

Construction—It is a group of occupations involved in all phases of the building industry.

Consumer and Homemaking—It is a group of occupations involved in the improvement of family living.

Environment—It is a group of occupations involved in the protection and conservation of nature, natural resources and inhabitants of our land.

Fine Arts and Humanities—It is a group of occupations involved in the advancement of the arts, religion, and culture.

Health—It is a group of occupations involved in providing services and facilities to maintain the health of people.

Hospitality and Recreation—It is a group of occupations involved in promoting entertainment and tourism.

Manufacturing—It is a group of occupations involved in the design and assembly of products.

Marine Science—It is a group of occupations involved in the discovery and cultivation of food and minerals from oceans, lakes, rivers.

Marketing and Distribution—It is a group of occupations involved in influencing people to buy a product or service and shipping products from manufacturer to seller.

Personal Services—It is a group of occupations involved in personal improvement; the comfort and appearance of a person, and his/her possessions.

Public Services—It is a group of occupations involved in benefitting society as a whole; salaries are paid by taxes.

Transportation—It is a group of occupations involved in moving people and things from one place to another.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 3—NAMING THE FIFTEEN CLUSTERS

Directions: Now that you have met BEFT, you should have no problem in naming the fifteen clusters. List them below:

A

B
E
F
T

C
C
C
M
M
M

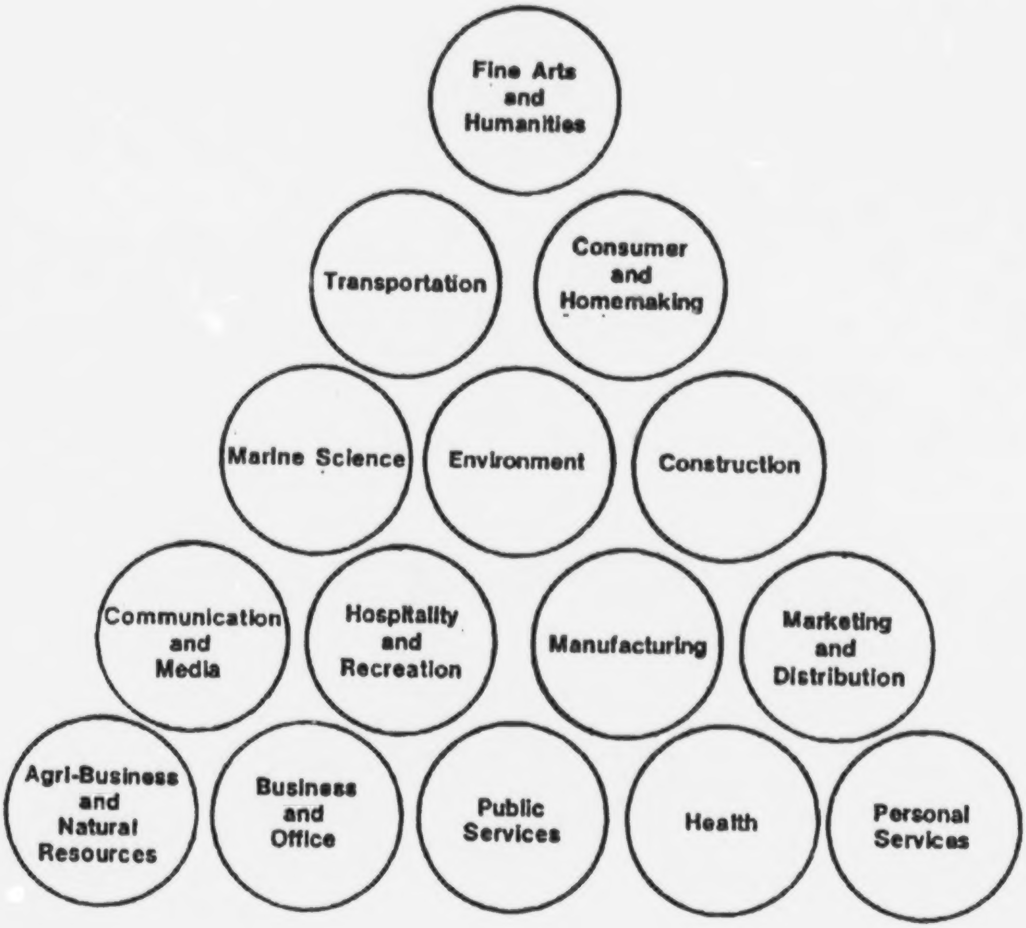
H
H
P
P

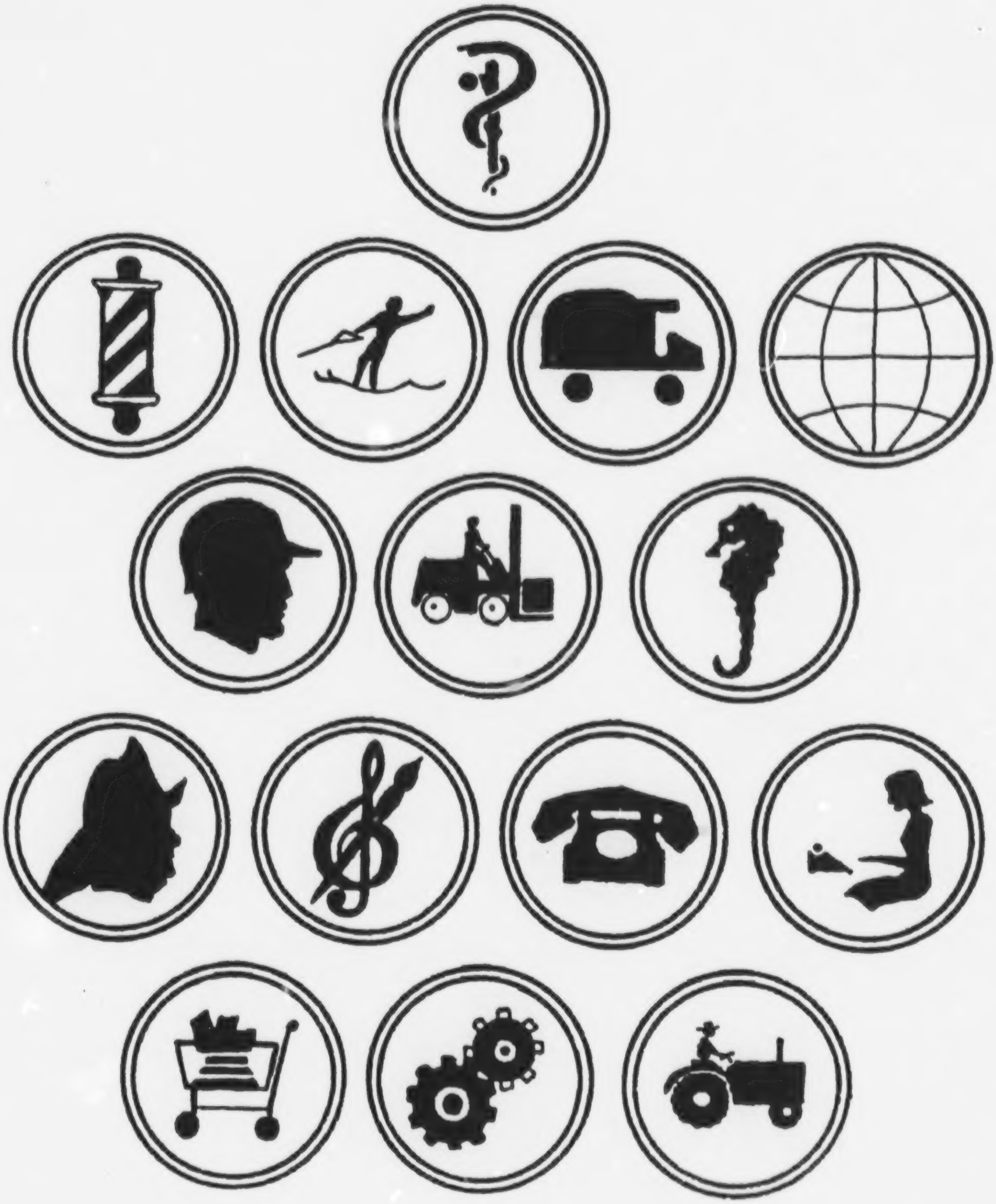
UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 4—USING SYMBOLS TO HELP REMEMBER THE CLUSTERS

Directions: It is sometimes easier to remember things if you can link them to a picture, or a symbol in this case.

1. Cut out the symbols on the following page.
2. Glue the symbol in the circle that it best represents.


Fine Arts and Humanities
Transportation
Consumer and Homemaking
Marine Science
Environment
Construction
Communication and Media
Hospitality and Recreation
Manufacturing
Marketing and Distribution
Agri-Business and Natural Resources
Business and Office
Public Services
Health
Personal Services



UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 5—CREATE YOUR OWN SYMBOLS

Directions: After seeing the symbols others use for the clusters, you may want to create your own. Now is your chance! Draw pictures inside the circles that you feel best represent the clusters.

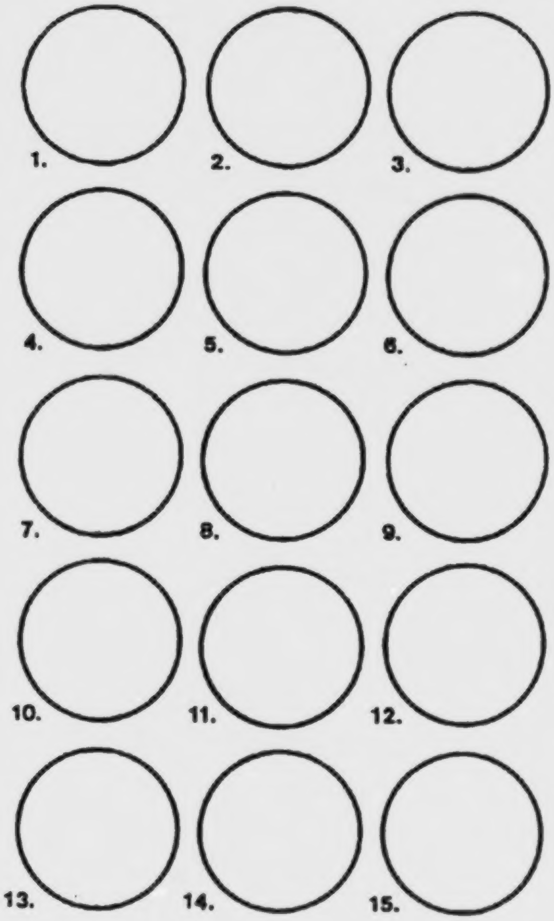
1. **Fine Arts and Humanities**
2. **Transportation**
3. **Consumer and Homemaking**

4. **Marine Science**
5. **Environment**
6. **Construction**

7. **Communication and Media**
8. **Hospitality and Recreation**
9. **Manufacturing**

10. **Marketing and Distribution**
11. **Agri-Business and Natural Resources**
12. **Business and Office**

13. **Public Services**
14. **Health**
15. **Personal Services**



UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

ACTIVITY SHEET 6—WRITE ONE/ADD ONE

Directions:

1. Divide the class into two or more groups (depending on chalkboard space).
2. When the teacher gives the signal, the first member of each group goes to the chalkboard.
3. He/she writes the first letter of the A BEFT formula, then sits down.
4. The next student writes the second letter of the formula if the first was correct; if it was not, he/she corrects the letter. Once the formula has been completed, students should write the cluster titles.

   (**NOTE:** Each student must write something, even if it is wrong; the next student, however, must correct the other student's mistake. Students can only correct **or** add—**not both**.)

5. Play proceeds until the A BEFT formula has been completed and the fifteen cluster titles have been written and spelled correctly.
6. The group who first completes the A BEFT formula and lists the cluster titles (spelled correctly) is declared the winner.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

ACTIVITY SHEET 7—REINFORCING THE CLUSTERS' DEFINITIONS

Directions:

1. Reproduce information on **INFORMATION SHEET 3—THE FIFTEEN OCCUPATIONAL CLUSTERS.**
2. Cut the definitions apart, fold them, and place them in a container.
3. Divide the class into two groups.
4. Have the groups stand on opposite sides of the room.
5. Have the student draw the definitions from the container.
6. Read the definition to the student.
7. The student must state to what cluster the definition belongs.
8. If the student answers incorrectly, have him/her sit down.
9. Ask the next student from the opposite team, and so on until it is answered correctly.
10. The team with the most players standing when all 15 definitions have been given is declared the winner.
11. Have a special privilege or prize for the team who wins.

    (NOTE: If your classroom environment does not lend itself to group activities, read the definitions to the class and have the students write on their papers the cluster it defines. The student(s) who have the correct answers could then be granted a special privilege or given a prize.)

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
INFORMATION SHEET 4—EXAMPLES OF OCCUPATIONS CLASSIFIED IN EACH CLUSTER

I. Agri-Business and Natural Resources

A. Cattle rancher
B. Food and drug inspector
C. Veterinarian
D. Zoologist
E. County agricultural extension agent

II. Business and Office

A. Accountant
B. Data systems analyst
C. Court reporter
D. Secretary
E. Bank cashier

III. Communications and Media

A. News reporter
B. Telephone operator
C. Newspaper editor
D. Announcer
E. Sound effects engineer

IV. Construction

A. Carpenter
B. Plumber
C. Welder
D. Painter
E. Surveyor

V. Consumer and Homemaking

A. Dietician
B. Interior decorator
C. County home demonstration agent
D. Bridal consultant
E. Consumer service specialist

VI. Environment

A. Air analyst
B. Food and drug inspector
C. Soil conservationist
D. Exterminator
E. Milk sampler

VII. Fine Arts and Humanities

A. Poet
B. Actor
C. Clergy member
D. Curator
E. Artist

VIII. Health

A. Psychiatrist
B. Medical doctor
C. Hospital administrator
D. Pharmacist
E. Nurse

IX. Hospitality and Recreation

A. Travel agent
B. Athletic trainer
C. Professional athlete
D. Clown
E. Zoo caretaker

X. Manufacturing

A. Die maker
B. Machinist
C. Sewing machine operator
D. Quality control technician
E. Laborer

XI. Marine Science

A. Aquatic biologist
B. Seal hunter
C. Diver
D. Fish farmer
E. Sailmaker

XII. Marketing and Distribution

A. Salesperson
B. Store manager
C. Purchasing agent
D. Model
E. Shipping clerk

XIII. Personal Service

A. Housekeeper
B. Chauffeur
C. Hair stylist
D. Dog groomer
E. Drycleaner

XIV. Public Service

A. Police officer
B. City manager
C. Teacher
D. Mail carrier
E. Water treatment plant operator

XV. Transportation

A. Truck driver
B. Airline pilot
C. Bus driver
D. Locomotive engineer
E. Navigator

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
ACTIVITY SHEET 8—USE THE WANT ADS

Directions: Use the help wanted ads in the newspaper to help you match occupations to the cluster in which they best fit. Try to find one ad for each cluster. Paste them in the correct square on this sheet.

Agri-Business and Natural Resources

Business and Office

Comunication and Media

Construction

Consumer and Homemaking

Environment

Fine Arts and Humanities

Health

Hospitality and Recreation

Manufacturing

Marine Science

Marketing and Distribution

Personal Service

Public Service

Transportation

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

ACTIVITY SHEET 9—HOW MANY OCCUPATIONS DO YOU KNOW FOR EACH CLUSTER?

Directions: List as many occupations as you can for each cluster.

Agri-Business and Natural Resources	**Business and Office**	**Comunication and Media**
Construction	**Consumer and Homemaking**	**Environment**
Fine Arts and Humanities	**Health**	**Hospitality and Recreation**
Manufacturing	**Marine Science**	**Marketing and Distribu-**
Personal Service	**Public Service**	**Transportation**

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS

UNIT TEST—PART 1

Match the following terms and definitions by placing the correct letter in the blank at the left.

_______1. Culture

_______2. Cluster

_______3. Social

_______4. Raw Materials

_______5. Moral

a. those things that exist in their natural state; those things not changed by some human process

b. of or having to do with human beings as they live together in a group or groups

c. standard of what is good or right in the way one lives

d. the ideas, skills, arts, tools, and way of life of certain people in a certain time

e. together because of a likeness or similarity

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
UNIT TEST—PART 2

Directions: Place the letter of the correct answer in the space at the left.

_____ 1. Rapid changes in technology __________________, therefore, there may be many occupations of which you have never heard.

a. create new occupations
b. delete new occupations
c. change the job tasks of many occupations
d. a, b, and c

_____ 2. Because there are over _________ occupations available, a system had to be created to make it easier to learn more about the occupations.

a. 2000
b. 100,000
c. 20,000
d. 1 million

_____ 3. Most people _________ recall the titles of **all** the occupations that exist.

a. can
b. cannot

_____ 4. The cluster classification system groups _________ occupations to form a cluster.

a. identical
b. random
c. like
d. unlike

_____ 5. Occupations can be classified in __________________.

a. in more than one cluster
b. only one cluster

______ 6. __________ requiring different levels of education/training can be found within each cluster.

a. Clusters
b. Systems
c. Changes
d. Occupations

______ 7. Using the cluster system helps you in discovering occupations you ____________________ existed.

a. already knew
b. did not know

______ 8. By discovering more ______________, you are more likely to find the career that is right for you.

a. occupations
b. technology
c. friends
d. products

______ 9. Where you live, and what you do, ______________ influence the occupations with which you come in contact.

a. does not
b. does

______10. If for some reason you are unable to pursue the occupation that interests you, do not give up; you will ____________________.

a. find a job some day
b. find very similar careers within the same cluster
c. have to change your mind completely concerning your career plans
d. never have to work, anyway

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
UNIT TEST—PART 3

Match the following terms and definitions by placing the correct letter in the blanks at the left.

______ 1. Agri-Business and Natural Resources
______ 2. Business and Office
______ 3. Environment
______ 4. Fine Arts and Humanities
______ 5. Transportation
______ 6. Communications and Media
______ 7. Construction
______ 8. Consumer and Homemaking
______ 9. Manufacturing
______10. Marine Science
______11. Marketing and distribtion
______12. Health
______13. Hospitality and Recreation
______14. Personal Services
______15. Public Services

a. It is a group of occupations involved in the preparation and presentation of oral or written communications to the public.

b. It is a group of occupations involved in all phases of the building industry.

c. It is a group of occupations involved in promoting entertainment and tourism.

d. It is a group of occupations involved in the protection and conservation of nature, natural resources and inhabitants of our land.

e. It is a group of occupations involved in recording and processing of data in business offices.

f. It is a group of occupations involved in getting raw materials from the earth; regulated by the U.S. Department of Agriculture.

g. It is a group of occupations involved in the advancement of the arts, religion and culture.

h. It is a group of occupations involved in providing services and facilities to maintain the health of people.

i. It is a group of occupations involved in the improvement of family living.

j. It is a group of occupations involved in moving people and things from one place to another.

k. It is a group of occupations involved in personal improvement; the comfort and appearance of a person, and his/her possessions.

l. It is a group of occupations involved in the discovery and cultivation of food and minerals from oceans, lakes, rivers.

m. It is a group of occupations involved in influencing people to buy a product or service and shipping products from manufacturer to seller.

n. It is a group of occupations involved in the design and assembly of products.

o. It is a group of occupations involved in benefitting society as a whole; salaries are paid by taxes.

UNIT II

INTRODUCTION TO THE OCCUPATIONAL CLUSTERS
UNIT TEST—PART 4

Name the fifteen occupational clusters.

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AGRI-BUSINESS AND NATURAL RESOURCES

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UNIT III

AGRI-BUSINESS AND NATURAL RESOURCES
INFORMATION SHEET

I. What Is the Agri-Business and Natural Resources Cluster?

  A. It is a group of occupations involved in getting raw materials from the earth; regulated by the U.S. Department of Agriculture.

  B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

  A. **Fisheries and Wildlife**—occupations concerned with the development and productive use of fish and wildlife

  B. **Forestry**—occupations involved in forest cultivation and the harvesting of forest products

  C. **Land and Water Management**—occupations concerned with the use of public lands and water resources

  D. **Mining and Quarrying**—occupations concerned with locating and removing raw materials from the land

  E. **Petroleum and Related Products**—occupations concerned with the production of petroleum and related products

  F. **Processing and Marketing**—occupations involved in purchasing and processing of agricultural products before they are sent to the manufacturer or to the consumer

  G. **Productive Agriculture**—occupations concerned with producing food and fiber for productive use and plants for the purpose of providing beauty

  H. **Research**—occupations involved in the study of plants, animals, and natural resources with emphasis on their use by humans

  I. **Service**—occupations involved in supplying technical assistance, supplies, and equipment

  J. **Support and Regulations**—occupations involved in providing information and implementing and enforcing the laws and regulations associated with this field

III. Examples of Occupations

FISHERIES AND WILDLIFE

Fish Farmer-(D.O.T. 446.161-010)-Arranges with buyers for sale of fish. May perform standard tests on water samples to determine oxygen content. May be designated according to kind of fish raised, as trout farmer.

Fish and Game Warden-(D.O.T. 379.167-010)-Patrols assigned area to prevent game law violations, investigate reports of damage to crops and property by wildlife, and compile biological data. Investigates reports of fish and game law violations and issues warnings or citations. Serves warrants, makes arrests, and prepares and presents evidence in court actions. Collects and reports information on condition of fish and wildlife in their habitat, availability of game food and cover, and suspected pollution of waterways. Investigates hunting accidents and files reports of findings. May assist in promoting hunter safety.

Game Farmer-(D.O.T. 412.131-010)-Supervises and coordinates activities of workers engaged in breeding, raising, and protecting game on private or state game farm. Oversees preparation and transfer of game to zoos, filming locations, and release areas. Directs feeding and watering of game, cleaning of pens and yards, and maintenance of buildings and equipment. Trains workers in methods of raising, training, and transferring game.

Gamekeeper-(D.O.T. 169.171-010)-Breeds, raises, and protects game animals and birds on state game farm or private game preserves.

Hunting and Fishing Guide-(D.O.T. 353.161-010)-Plans, organizes and conducts hunting and fishing trips for individuals and groups. Plans itinerary for hunting and fishing trips, applying knowledge of countryside to determine best route and sites.

Predatory Animal Hunter-(D.O.T. 461.661-010)-Hunts, traps, and kills predatory animals to collect bounty. Hunts quarry, using dogs, and shoots animals. Traps or poisons animals. May skin animals and treat pelts for marketing. May train dogs for hunting, may be designated according to animal hunted as cougar hunter; coyote hunter; wolf hunter.

Trapper, Animal-(D.O.T. 461.684-014)-Traps animals for pelts, live sale, bounty, or to relocate them in other areas. Sets traps.

FORESTRY

Cruiser-(D.O.T. 459.387-010)-Cruises forest land to estimate volume of marketable timber and collect data concerning forest conditions for appraisal, administration, logging, land use, and forest management planning.

Forest Fire Fighter-(D.O.T. 452.687-014)-Suppresses forest fires, working alone or as member of crew. Fells trees, cuts and clears brush, digs trenches, and extinguishes flames and embers to contain or suppress fire, using ax, chainsaw, shovel, and hand- or engine-driven water pumps.

Forester-(D.O.T. 040.061-034)-Manages and develops forest lands and their resources for economic and recreational purposes. Plans and directs projects in forestation and reforestation. Maps forest areas, estimates standing timber and future growth, and manages timber sales.

Log Grader-(D.O.T. 455.367-010)-Grades logs in sorting yard, millpond, or log deck according to industry or company standards. Measures diameter and length of log, using scale stick, steel tape, or other measuring aid, and determines total volume, using conversion table.

Log Scaler-(D.O.T. 455.487-010)-Estimates marketable content of logs or pulpwood. Measures dimensions of each log or entire loads of pulpwood, using scale stick, tape measure, or other measuring device.

Logger-(D.O.T. 454.684-018)-Harvests timber trees, performing a combination of the following tasks: Fells trees in specified direction, removes limbs and top, and measures and cuts tree into log lengths, using chainsaw, wedges, and ax.

Logging Contractor-(D.O.T. 183.167-038)-Directs and coordinates, through subordinate supervisory personnel, activities of workers engaged in logging operations. Reviews logging orders and inspects designated timber tract and terrain to determine methods for logging operations, size of crew, and equipment requirements.

Sawmill Worker-(D.O.T. 667.686-014)-Performs any combination of duties in preparing logs for cutting into lumber and storing cut lumber in sawmill.

Seed Cone Picker-(D.O.T. 453.687-010)-Gathers decorative greens, medicinal plants and barks, tree cones, moss, or other wild plant life from forest by hand or using handtools, such as pruning shears, knife, or shovel.

Silviculturist-(D.O.T. 040.061-050)-Establishes and cares for forest stands. Manages tree nurseries and thins forests to encourage natural growth of sprouts or seedlings of desired varieties. Develops techniques for measuring and identifying trees.

Wood Technologist-(D.O.T. 040.061-062)-Conducts research to determine composition, properties, behavior, utilization, development, treatments, and processing methods of wood and wood products.

LAND AND WATER MANAGEMENT

Basin Operator-(D.O.T. 954.385-010)-Tends and maintains desilting basin that removes silt from river water entering irrigation system. Reads dials and gauges to determine if equipment is operating according to specifications.

Irrigation Engineer-(D.O.T. 005.061-022)-Plans, designs, and oversees construction of irrigation projects for transporting and distributing water to agricultural lands.

Surveyor-(D.O.T. 018.167-038)-Plans, directs, or conducts surveys of land areas.

Watershed Tender-(D.O.T. 954.382-018)-Controls equipment to regulate waterflow and water level in reservoirs. Reads gauges and meters to control specified waterflow, water levels, and water pressure in reservoir. Records data, such as water level, turbidity, temperature, and flow rate.

MINING AND QUARRYING

Coal Washer-(D.O.T. 541.382-010)-Operates equipment to size and wash coal for shipment or further processing. Starts equipment, such as launders, tables, shakers, sizing screens, and conveyors. Regulates flow of coal and water to separate coal from slate, rock, and other foreign material and transfers cleaned and sized coal to loading chutes or storage.

Crush Setter-(D.O.T. 933.664-010)-Adjusts gaps of cone crushers used to reduce taconite ore to specified size. Lowers lead cone into operating crusher that compresses cone to size of crusher gap.

Dispatcher-(D.O.T. 932.167-010)-Coordinates movements of haulage trips (trains) in underground mine to or from working force or dump area.

Mine Electrician-(D.O.T. 824.261-010)-Plans layout, installs, and repairs wiring, electrical fixtures, apparatus, and control equipment. Plans new or modified installations to minimize waste of materials, provide access for future maintenance, and avoid unsightly, hazardous, and unreliable wiring, consistent with specifications and local electrical codes.

Mine-Machinery Mechanic-(D.O.T. 620.261-022)-Analyzes malfunctions and repairs, rebuilds, and maintains construction equipment, such as cranes, power shovels, scrapers, paving machines, motor graders, trench-digging machines, conveyors, bulldozers, dredges, pumps, compressors, and pneumatic tools.

Miner-(D.O.T. 939.281-010)-Mines ore, coal, or rock in underground mine, performing any combination of tasks in areas where high production equipment is limited by economic factors or natural formations.

Mining Engineer-(D.O.T. 010.061-014)-Determines location and plans extraction of coal, metallic ores, non-metallic minerals, and building materials, such as stone or gravel. Conducts or collaborates in geological exploration to determine location, size, accessibility, and estimated value of deposit.

Quarry Worker-(D.O.T. 939.667-014)-Performs any combination of the following tasks in rock quarry: Removes mud and muck from surface of stone, using pick, shovel, and steam hose. Chips irregularities from stone slabs to produce uniform, rectangular shapes and reduce shipping weights, using pick. Loosens blasted stone, using pick and crowbar.

Stone Grader-(D.O.T. 679.567-010)-Inspects quarried stone for size and quality and classifies stone according to standard schedule. Measures dimensions of stone, using rule. Marks measurements and quality classification on stone with chalk. Maintains production record.

PETROLEUM AND RELATED PRODUCTS

Cementer, Oil Well-(D.O.T. 939.462-010)-Controls pumping and blending equipment to acidize, cement, or fracture gas or oil wells and permeable rock formations.

Driller-(D.O.T. 930.382-026)-Operates gasoline, diesel, electric, or steam draw works to drill oil or gas wells.

Manager, Leasing-(D.O.T. 186.117-046)-Directs land and leasing department of petroleum company to secure leases, options, rights-of-way, and special agreements covering land and mineral rights for drilling wells and producing gas and oil.

Mud-Plant Operator-(D.O.T. 930.685-010)-Tends machine that mixes mud for use in drilling oil and gas wells.

Oil Pumper-(D.O.T. 914.382-010)-Operates steam, gas, gasoline, electric, or diesel pumps and auxiliary equipment to restore and control flow of oil from wells.

Perforator Operator, Oil Well-(D.O.T. 931.382-010)-Operates truck-mounted hoisting equipment and electrical control panel to position and explode charges in oil or gas wells to pierce drill pipes, casings, tubings, and fracture earth formations.

Petroleum Engineer-(D.O.T. 010.061-018)-Analyzes technical and cost factors to plan methods to recover maximum oil and gas in oil-field operations, utilizing knowledge of petroleum engineering and related technologies.

Rotary-Driller Helper-(D.O.T. 930.684-026)-Assists rotary driller (petroleum production) in operating machinery to drill oil or gas wells, using handtools and power tongs and wrenches.

Roustabout-(D.O.T. 869.684-046)-Assembles and repairs oilfield machinery and equipment, using handtools and power tools.

Seismic Prospector-(D.O.T. 024.061-026)-Studies structure of subsurface rock formations to locate petroleum deposits.

Tool Pusher-(D.O.T. 930.130-010)-Supervises and coordinates activities of workers engaged in drilling oil and gas wells in area consisting of one or more well sites.

Well Puller-(D.O.T. 930.382-030)-Controls power hoisting equipment to pull casing, tubing, and pumping rods from oil and gas wells for repair and to lower repaired equipment, testing devices, and servicing tools into well.

PROCESSING AND MARKETING

Auctioneer, Livestock-(D.O.T. 294.257-010)-Sells livestock at auction to highest bidder.

Cotton Classer-(D.O.T. 429.387-010)-Classifies cotton according to grade, staple length, and character, employing knowledge of cotton fiber and standards for various grades as established by U. S. Department of Agriculture.

Drier Attendant-(D.O.T. 523.685-058)-Tends rotary driers that remove moisture from materials, such as corn germs, alfalfa, and shredded sweet potatoes.

Egg Candler-(D.O.T. 529.687-074)-Inspects eggs to ascertain quality and fitness for consumption or incubation, according to prescribed standards.

Fruit-Buying Grader-(D.O.T. 529.387-018)-Examines, sorts, and grades sample fruit from load at receiving point.

Ginner-(D.O.T. 429.685-010)-Tends variety of machines, such as dryers, cleaners, gin stands, and linters that dry, clean, and separate cotton lint from seed and waste materials.

47

Grader, Meat-(D.O.T. 525.387-010)-Examines animal carcasses to determine grade in terms of value.

Sorter, Agricultural Produce-(D.O.T. 529.687-186)-Sorts agricultural produce, such as bulbs, fruits, nuts, and vegetables. Discards cull (inferior or defective) items and foreign matter.

PRODUCTIVE AGRICULTURE

Animal Breeder-(D.O.T. 410.161-010)-Breeds and raises animals, such as cats, dogs, guinea pigs, mice, monkeys, rabbits, and rats.

Beekeeper-(D.O.T. 413.161-010)-Raises bees to produce honey and pollinate crops.

Cattle Rancher-(D.O.T. 410.161-018)-Breeds and raises livestock, such as beef cattle, dairy cattle, goats, horses, reindeer, sheep, and swine, for such purposes as sale of meat, riding or working stock, breeding, or for show; and for products, such as milk, wool, and hair.

Harvest Worker-(D.O.T. 403.687-018)-Harvests fruits and nuts, such as cherries, strawberries, grapes, oranges, and pecans, according to method appropriate for type of fruit, by hand or using tools, such as shears, rubber mallet, pronged scoop, or hooked pole.

Irrigation Supervisor-(D.O.T. 409.137-010)-Supervises and coordinates activities of workers engaged in irrigating crops.

Nursery Laborer-(D.O.T. 405.687-014)-Performs any combination of duties concerned with preparing soil and growth media, cultivating, and otherwise participating in horticultural activities under close supervision on acreage, in nursery, or in environmentally controlled structure, such as greenhouse and shed.

Orchard Pruner-(D.O.T. 408.684-018)-Cuts away dead and excess branches from fruit, nut, and shade trees, using handsaws, pruning hooks and shears, and long-handled clippers.

Orchardist-(D.O.T. 403.161-010)-Plants and cultivates trees, such as apple, orange, and walnut, and harvests fruit and nut crops, applying knowledge of horticulture and market conditions.

Poultry Breeder-(D.O.T. 411.161-014)-Breeds and raises poultry and fowl to improve strain and develop show stock.

RESEARCH

Agriculture Economist-(D.O.T. 050.067-010)-Plans, designs, and conducts research to aid in interpretation of economic relationships and in solution of problems arising from production and distribution of goods and services.

Agronomist-(D.O.T. 040.061-010)-Conducts experiments or investigations in field-crop problems and develops new methods of growing crops to secure more efficient production, higher yield, and improved quality.

Animal Taxonomist-(D.O.T. 041.061-090)-Studies origin, interrelationships, classification, life histories, habits, life processes, diseases, relation to environment, growth and development, genetics, and distribution of animals.

Apiculturist-(D.O.T. 041.061-018)-Studies bee culture and breeding. Conducts experiments regarding causes and controls of bee diseases and factors affecting yields of nectar and pollen on various plants visited by bees.

Biochemist-(D.O.T. 041.061-026)-Studies chemical processes of living organisms. Conducts research to determine action of foods, drugs, serums, hormones, and other substances on tissues and vital processes of living organisms.

Biologist-(D.O.T. 041.061-030)-Studies origin, relationship, development, anatomy, functions, and other basic principles of plant and animal life. May specialize in research centering around particular plant, animal, or aspect of biology.

Botanist-(D.O.T. 041.061-038)-Studies development and life processes, physiology, heredity, environment, distribution, anatomy, morphology, and economic value of plants for application in such fields as agronomy, forestry, horticulture, and pharmacology.

Entomologist-(D.O.T. 041.061-046)-Studies insects and their relation to plant and animal life. Identifies and classifies species of insects and allied forms, such as mites and spiders.

Geneticist-(D.O.T. 041.061-050)-Studies inheritance and variation of characteristics in forms of life. Performs experiments to determine laws, mechanisms, and environmental factors in origin, transmission, and development of inherited traits.

Geologist-(D.O.T. 024.061-018)-Studies composition, structure, and history of earth's crust. Examines rocks, minerals, and fossil remains to identify and determine sequence of processes affecting development of earth. Applies knowledge of chemistry, physics, biology, and mathematics to explain these phenomena and to help locate mineral, geothermal, and petroleum deposits and underground water resources.

Soil Scientist-(D.O.T. 040.061-058)-Studies soil characteristics and maps soil types, and investigates responses of soils to known management practices to determine use capabilities of soils and effects of alternative practices on soil productivity.

Zoologist-(D.O.T. 041.061-090)-Studies origin, interrelationships, classification, life histories, habits, life processes, diseases, relation to environment, growth and development, genetics, and distribution of animals.

SERVICE

Airplane Pilot, Agriculture-(D.O.T. 196.263-010)-Pilots airplane or helicopter, at low altitudes, over agricultural fields to dust or spray fields with seeds, fertilizers, or pesticides.

Artificial Breeding Technician-(D.O.T. 418.384-014)-Collects and packages bull semen for artificial insemination of cows.

Farm Equipment Mechanic-(D.O.T. 624.281-010)-Maintains, repairs, and overhauls farm machinery, equipment, and vehicles, such as tractors, harvesters, pumps, tilling equipment, trucks, and other mechanized, electrically powered, or motor-driven equipment, on farms or in farm-equipment repair shops.

Feed Mixer-(D.O.T. 520.685-098)-Tends machines that mix stock or poultry feed according to formula and conveys it to packing machine or storage.

Landscape Architect-(D.O.T. 001.061-018)-Plans and designs development of land areas for projects, such as parks and other recreational facilities, airports, highways, and parkways, hospitals, schools, land subdivisions, and commercial, industrial, and residential sites.

Poultry Vaccinator-(D.O.T. 411.684-014)-Vaccinates poultry for diseases, such as pox and bronchitis, by placing vaccine in drinking water, dusting air with vaccine powder, injecting vaccine in eye, leg, vent, wing web, or nostril of bird, using medicine dropper or hypodermic needle.

Seed Analyst-(D.O.T. 040.361-014)-Tests seed for germination, purity, and weed content.

Soils Tester-(D.O.T. 029.261-010)-Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics or composition of solid, liquid, or gaseous materials and substances for purposes such as quality control, process control, product development, or determining conformity to specifications.

Veterinarian-(D.O.T. 073.101-010)-Diagnoses and treats diseases and disorders of animals.

Veterinary Pharmacologist-(D.O.T. 073.061-034)-Studies drugs, including materia medica and therapeutics, as related to veterinary medicine. Required to hold degree of Doctor of Veterinary Medicine.

SUPPORT AND REGULATIONS

Agriculture Commodities Inspector-(D.O.T. 168.287-010)-Inspects agricultural commodities, processing equipment, and facilities to enforce compliance with governmental regulations.

County Agricultural Agent-(D.O.T. 196.127-010)-Organizes and conducts cooperative extension program to advise and instruct farmers and individuals engaged in agri-business in applications of agricultural research findings.

Food and Drug Inspector-(D.O.T. 168.267-042)-Inspects establishment where foods, drugs, cosmetics, and similar consumer items are manufactured, handled, stored, or sold to enforce legal standards of sanitation, purity, and grading.

Inspector, Grain and Mill-(D.O.T. 529.387-026)-Weighs packaged cereal, feed, and flour products to verify weights and examines packages for adequacy of labeling, stamping, sewing, or sealing.

Mine Inspector-(D.O.T. 168.267-074)-Inspects underground or open-pit mines to ascertain compliance with contractual agreements and with health and safety laws. Inspects for rotted or incorrectly placed timbers, dangerously placed or defective electrical and mechanical equipment, improperly stored explosives, and other hazardous conditions.

Park Superintendant-(D.O.T. 188.167-062)-Coordinates activities of park rangers and other workers engaged in development, protection, and utilization of national, state, or regional park.

Vocational Agriculture Teacher-(D.O.T. 097.227-014)-Teaches vocational training subjects in specific trades to students in public or private schools or in industrial plants.

UNIT III

AGRI-BUSINESS AND NATURAL RESOURCES

ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 20 occupations listed below in the Word Find. Look across, down, backwards, and diagonally.

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R B L A U C T I O N E E R D U O S L A L
O K D W A T E R S H E D T E N D E R I E
T L A N D S C A P E A R C H I T E C T M
C C M M D O I C I T Y R B F W A H Z R A
E S R I E R A F B E E K E E P E R Z O A
P U S N J C F E Y N Z P N Q V T K B U M
S R G E R H E B N S A Z O O L O G I S T
N V K I Y A T I E G D D S G R G A G T S
I E C N Z R G D R H C N T U H H R L A I
G Y A S O D Q U A R R Y W O R K E R B R
U O R P N I A W X T R X R S I L P S O U
R R D E P S V Z L E I A Y Z J L P D U T
D M Z C M T B B L E L O G G E R A F T L
D K E T E T C L Z X B W P P R I R L N U
N N D O B A I V Y A Q V Q B C J T S O C
A R Z R Q R S S O I L S T E S T E R L I
D U K K D J W E L L P U L L E R S U M V
O L L V E T E R I N A R I A N E R E T L
O F I S H A N D G A M E W A R D E N A I
F E C A L U R X A W B B I R T V D E N S
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Food and drug inspector
Surveyor
Fish and Game Warden
Veterinarian
Driller
Logger
Mine Inspector
Auctioneer
Watershed Tender
Ginner

Beekeeper
Zoologist
Quarryworker
Roustabout
Trapper
Silviculturist
Well Puller
Orchardist
Soils Tester
Landscape Architect

UNIT III

AGRI-BUSINESS AND NATURAL RESOURCES ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE OCCUPATIONAL CLUSTERS AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.	Choose from the activities in supplementary section 4
G. Identify and apply basic academic skills relevant to the duties of a variety of careers.	
H. Exhibit productive work habits and attitudes.	

The list of examples of occupations classified in the Agri-Business and Natural Resources cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT III

AGRI-BUSINESS AND NATURAL RESOURCES
ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

(NOTE: Have students identify the occupations that match the work tasks being simulated.)

Job Family—Fisheries and Wildlife

1. Obtain a map from a fish warden or the Texas Wildlife Commission and have the students locate the streams, lakes, and bays which may be used for public fishing.

2. Have the students prepare a report about the kinds of fish in local waters. Information may be found in the school or public library.

Job Family—Forestry

3. Have the students, using the state and national publications available, prepare a report about the birds and animals native to the local area.
   a. obtain a picture of each
   b. describe its natural food
   c. describe its typical shelter
   d. describe the local and/or federal laws concerning season, limits, and other requirements for harvesting and control

4. Have the students make a list of the trees that grow in your area and then have them describe the uses for those trees.

5. Have the students collect different kinds of finished wood to show the grain, color, and surface. Mount on a board and label each kind.

6. Have the students collect different kinds of pines, spruce, firs, etc., and make a small display for them.

7. Visit a tree or fruit farm in your area and have the students find out how some of the following management practices are carried out:
    a. selective cutting
    b. fire control
    c. improved cuttings
    d. disease and insect control
    e. soil erosion control

Job Family—Service

8. Have the students design the landscape for their present or future home.
    a. Label flowers, shrubs, trees, etc.
    b. Display completed drawings.

Job Family—Petroleum and Related

9. Reinforce the fact that energy fuels are made over a very long period of time, and the fuel is used much faster than it is made. Explain that most of the fuel we use is called fossil fuel.

    It would be very helpful to take the students on a fossil hunt if there are areas near the school where this might be possible. Call the science coordinator and ask where fossils might be found. If there are none in the vicinity of the school, ask him/her to help obtain fossils to show to the class. Be prepared to answer the following questions:

    What is a fossil?
    Were all fossils either plants or animals?
    Were all fossils once alive?
    How old are some of the fossils?
    How did nature turn plants and animals into fuel?

The following demonstration will help the students to understand how gas was formed:

> In a small bottle with a small neck (a soda pop bottle will do nicely if it is not colored) place a small amount of hamburger meat and lettuce leaves. Put a small balloon over the bottle mouth and place it in a spot where the sunshine will hit it. Leave it for as long as it takes for the balloon to start to fill with gas.

TEACHER'S NOTE: The hamburger meat represents an animal that has died, the lettuce represents a dead plant, and the bottle is a place to observe what happens.

As the plant and animal material begin to decay, gas will be given off and trapped in the bottle.

10. Take the students on a short walk around the school building and ask them to look for evidence of breakdown or decomposition. The following examples should help: metal rails showing signs of rusting, paint chipping, wood rotting, stones and bricks crumbling or gradually wearing away, sidewalks, roads, parking lots cracking and beginning to break down, and dead plant or animal material returning to soil components.

    Have the students list and possibly sketch some of the things that they observed breaking down or decomposing.

Job Family—Productive Agriculture

11. Have the students prepare a poster which consists of pictures of different breeds of cattle.

12. Have the students prepare a report about bees and how honey is produced.

UNIT III

AGRI-BUSINESS AND NATURAL RESOURCES
UNIT TEST

A. Name five occupations classified in the Agri-Business and Natural resources Cluster

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Agri-Business and Natural Resources cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

BUSINESS AND OFFICE

SOLD
Landmark
REAL ESTATE
FOR SALE
A-F

BEST COPY AVAILABLE

UNIT IV

BUSINESS AND OFFICE INFORMATION SHEET

I. What Is the Business and Office Cluster?

   A. It is a group of occupations involved in recording and processing of data in business offices.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Accounting**—occupations involved in methods of keeping and explaining financial records

   B. **Computer**—occupations involved in electronic data processing

   C. **Secretarial Science**—occupations involved in record keeping, writing, editing, and taking dictation

   D. **Management**—occupations involved in planning and organizing personnel activities

   E. **Personnel**—occupations involved in recruiting, interviewing, and hiring employees

   F. **Finance** —occupations involved in money management

   G. **Insurance**—occupations involved in the process of insuring life, real estate, and other important possessions against loss

   H. **Real Estate**—occupations involved in renting, buying, and selling of property

   I. **Clerical**—occupations involved in supporting on-going office operations

III. Examples of Occupations

ACCOUNTING

Controller - (D.O.T. 186.117-014) - Responsible for designing, maintaining, and evaluating a general accounting system for an organization. (Also known as comptroller.)

Accountant, Cost - (D.O.T. 160.167-018) - Installs and maintains systems for organization with procedures not ordinarily supported by standard accounting systems.

Accountant, Budget - (D.O.T. 160.167-014) - Estimates expenditures. Submits overall reports to management.

Accountant, Property - D.O.T. 160.167-022) - Designs system to provide effective control. Identifies and keeps records of all company-owned or leased equipment, buildings, and other property.

Accountant, Certified Public (C.P.A.) - Meets state legal requirements for public practice (education and experience). Usually has private practice specializing in income tax returns.

Accounting Clerk - (D.O.T. 216.482-010) - Performs variety of routine calculating, posting, and typing duties in accounting. Other related jobs are voucher clerk, payroll clerk, and typist.

Accountant, Systems - (D.O.T. 160.167-026) - Creates and installs special accounting systems for organizations which cannot use standardized system.

Bookkeeper - (D.O.T. 210.382-018) - Keeps one section or set of financial records. Related jobs are accounts-receivable bookkeeper, Christmas-club bookkeeper, interest-accrual bookkeeper, safe-deposit-box bookkeeper, and savings bookkeeper.

Accountant, Tax - (D.O.T. 160.162-010) - Prepares federal, state, or local tax return of individuals, business establishments, or other organizations. Specializes in specific phases of tax accounting.

Accountant, Machine Processing - (D.O.T. 160.167-026) - Coordinates mechanized accounting operations. Confers with management to adapt accounting and record keeping systems to machine accounting processes.

Statistician - (D.O.T. 020.167-026) - Discovers general facts. Interprets quantitative information by application of statistical methods to a mass of related individual observations in field of designated specialization. See also Marketing and Distribution cluster: Market Research and Analysis job family.

Mathematician - (D.O.T. 020.067-014) - Determines mathematical principles involved and most efficient methodology for solutions of problems pertaining to accounting functions.

Trust-Savings Account Clerk - (D.O.T. 216.382-074) Specializes in trusts, savings, mortgages, and legal transactions.

Accountant (manager, office) - (D.O.T. 160.167-010) - Plans and directs overall accounting program of organization.

Accountant, Budget - (D.O.T. 160.167-014) - Responsible for one entire phase of accounting system. Supervises personnel handling various phases of accounting.

COMPUTER

Systems Analyst, Electronic Data Processing - (D.O.T. 012.167-066) - Analyzes business problems. Makes formulation and conversion to programmable form. Changes material to electronic data processing system.

Data Typist (Data Entry Typist) - (D.O.T. 203.582-022) - Converts alphabetic, numeric, and symbolic data into coded form. Processes magnetic devices.

Teacher - Computer Science - (D.O.T. 019.277-010) - Instructs in specialized area of data processing on the secondary educational level.

Word Processing Operator - Transcribes material from dictating equipment, handwritten or typed copy. Using word processing equipment, prepares letters, reports, and other documents. Formats, proofreads, edits, and revises documents to produce error-free final copy.

Micro Computer Support Technician - Delivers and installs micro computer systems. Offers continued support to client by diagnosing problems of computer systems.

Firmware/Software Engineer - Develops and programs software programs for computer systems.

Key-Punch Operator - (D.O.T. 203.582-030) - Prepares punched cards for overall operation. Proofs material before and after punched cards are prepared. Assists in designing card phase for specific job or project.

Computer Operator - (D.O.T. 213.362-010) - Examines the programmer's instruction sheet for the run and ascertains procedure to be followed. Readies the equipment. If malfunction occurs, trouble shoots for basic cause of error.

Programmer, Business - (D.O.T. 020.162-014) - Converts scientific, engineering, and technical problem formulations to format processable by computer.

Data-Reduction Technician - (D.O.T. 020-162-010) - Analyzes new data recorded on magnetic devices, photographic film, and other media. Reduces raw data to meaningful and manageable terms. Translates data into numerical values, equations, flow charts, graphs, or other media.

Tape Librarian - (D.O.T. 206.387-030) - Responsible for storing magnetic devices. Maintains control record on all magnetic devices. Organizes a filing system to fit the purpose of each project.

Quality-Control Technician - (D.O.T. 012.261-014) - Tests and inspects computers at various stages of production process to determine and maintain quality and reliability of product. Also verifies quality of appearance of computers.

Systems Engineer, Electronic Data Processing - (D.O.T. 003.167-062) - Analyzes data processing needs to determine computer system that will provide system capabilities required for project or company. Plans layout of new system installation or modification of existing system and oversees installation of office automation hardware and software. Troubleshoots technical computer systems problems for customer.

SECRETARIAL SCIENCE

Secretary - (D.O.T. 201.362-030) - Takes dictation, schedules appointments, gives information to callers, and relieves officials of minor administrative and business details. May supervise clerical workers.

Legal Secretary - (D.O.T. 201.362-010) - Prepares legal papers and correspondence of a legal nature, such as summonses, complaints, motions, and subpoenas. Requires specialized knowledge and training in the field of law.

Social Secretary - (D.O.T. 201.162-010) - Coordinates social, business, and personal affairs of employer. Reads and answers routine correspondence, using typewriter or in own handwriting as situation demands. May manage financial affairs of entire house.

Supervisor, Steno Pool - (D.O.T. 202.132-010) - Supervises and coordinates activities of workers engaged in taking and transcribing dictation of correspondence and reports.

Stenographer - (D.O.T. 202.362-014) - Takes dictation in shorthand of correspondence, reports, and other matters, and operates typewriter to transcribe dictated material. May perform a variety of clerical duties.

Medical Secretary - (D.O.T. 201.362-014) - Performs secretarial duties such as dictation, transcribing, and typing, utilizing knowledge of medical terminology and hospital, clinic, or laboratory procedures.

Court Reporter (Shorthand Reporter) - (D.O.T. 202.362-010) - Records examination, testimony, judicial opinions, and other legal records by machine shorthand.

Court Clerk - (D.O.T. 243.362-010) - Keeps records of county and handles court dockets. Coordinates records between clerk's office, attorney's office, and court. Assists court reporters in various phases of their work. Handles jury summonses, records. Maintains court appeal record for court. Processes all legal papers for court. May work through related offices, such as district clerk's office.

MANAGEMENT

Manager, Industrial Organization - (D.O.T. 189.117-022) - Directs and coordinates activities of industrial organization to obtain well-run operation and to ensure profits. Plans, develops, and puts into effect business policies and goals. Supervises department managers.

Management Trainee - (D.O.T. 189.167-018) - Performs job duties concerned with or pertaining to the conducting of business affairs within a business under supervision to gain knowledge and experience required for promotion to management positions.

Public Relations Representative - (D.O.T. 165.067-010) - Plans and conducts programs designed to secure publicity for a business or client.

Supervisor - Handles people or directs activities of others. Works through people to accomplish productive work.

Faculty Member, College or University - (D.O.T. 090.227-010) - Conducts college or university courses for undergraduate or graduate students in business and management (Also see Public Service cluster.)

Training Representative - (D.O.T. 166.227-010) - Prepares and conducts training programs in organization.

General Manager (Production Superintendent) - (D.O.T. 183.117-014) - Directs and coordinates, through supervisory personnel, activities concerned with the production of company products. Utilizes knowledge of product technology, production methods and procedures, capabilities of machines and equipment, and management practices.

Assistant Manager - Assists manager by performing similar duties and by assuming authority and responsibilities of manager during manager's absence. Supervised by manager.

Consultant (Management) - (D.O.T. 189.167-010) - Analyzes problems in management. Conducts studies and surveys to obtain data. Analyzes data to advise on or recommend solution to a management problem. Writes follow-up reports.

PERSONNEL

Supervisor, Personnel Clerks - (D.O.T. 209.132-010) - Supervises and coordinates activities of workers engaged in compiling and maintaining personnel records.

Employment Interviewer - (D.O.T. 166.267-010) - Interviews job applicants. Evaluates people for special jobs. Verifies written reports and test data for possible qualifications.

Personnel Recruiter - (D.O.T. 166.267-010) Travels to geographically distant areas from company's operations. Interviews applicants for position openings.

Investigator (Personnel) - (D.O.T. 241.267-030) - Checks and verifies background of person applying for job. Compiles detailed report of findings.

Personnel Clerk - (D.O.T. 209.362-026) - Compiles and keeps personnel records. Does office duties involving personnel records such as filing, typing wage scales, absences, promotions, training statuses, and discharges.

Accident Report Clerk - (D.O.T. 209.362-026) - Prepares and files reports of accidents and injuries at industrial establishment. May perform similar job duties as personnel clerk.

Employment Manager - (D.O.T. 166.167-030) - Organizes, directs, and coordinates personnel relations of organizations.

Job Analyst (personnel analyst) - (D.O.T. 166.267-018) - Collects, analyzes, and develops occupational data concerning jobs and job qualifications.

Position Classifier - (D.O.T. 166.267-018) - Analyzes and classifies positions according to regulated guidelines such as level of difficulty and responsibility.

Counselor (Vocational) - (D.O.T. 045.107-010) - Instructs and advises job seekers in field of employment best suited. Evaluates personality, education, and experience. May be in-house person or consultant for organization. (Also See Public Service cluster)

FINANCE

Financial Analyst - (D.O.T. 020.167-014) - Conducts statistical analysis of information affecting investment programs of public, industrial, and financial installations. Related areas found in banks, insurance, and investment houses.

Financial Economist - (D.O.T. 050.067-010) - Studies nature of money, credit, and credit instruments and operations to develop monetary policies and to forecast financial activity.

Financial Aids Officer - (D.O.T. 090.117-030) - Directs and coordinates programs of scholarship, grants-in-aid, loans, and student employment. Coordinates activities of school officials.

Treasurer, Financial Institution (Bank Cashier) - (D.O.T. 186.117-070) - Directs bank's monetary programs, transactions, and security measures in accordance with regulations. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Bank Reconciliation Clerk - (D.O.T. 216.382-018) - Reconciles records involving customers and organizations. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Bank President - (D.O.T. 186.117-054) - Develops and administers policies of organization in accordance with corporate charter. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Bank Vice-President - (D.O.T. 186.117-078) - Directs activities of regional bank office, branch bank, or administrative bank division, as designated by board of directors. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Auditor (Bank Examiner) - (D.O.T. 160.162-014) - Examines and analyzes records, prepares reports and certifies results. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Teller - (D.O.T. 211.362-018) - Receives and pays out money, and keeps records of money and negotiable instruments involved in various banking and other financial transactions. Related jobs may be found in savings and loans.

Loan Officer - (D.O.T. 241.367-018) - Examines and evaluates applications for lines of credit, installment credit, or commercial, real estate, and consumer loans. Recommends approval or disapproval. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Account Analyst - (D.O.T. 214.382-010) - Computes charges to be made against commercial accounts for services performed by bank.

Sales Agent, Securities (Stockbroker) - (D.O.T. 251.157-010) - Buys and sells stocks and bonds for individuals and organizations.

Credit and Collection Manager - (D.O.T. 168.167-054) - Directs and coordinates activities of workers engaged in conducting credit investigations and collecting delinquent accounts of customers,

INSURANCE

Insurance Attorney - (D.O.T. 110.117-014) - Advises management of insurance organizations on legality of insurance transactions.

Insurance Clerk - (D.O.T. 219.362-034) - Examines life insurance policies held as security for commercial or personal credit loans and keeps records of bank-owned insurance and fire insurance on commodity loans.

Claim Examiner - (D.O.T. 241.267-018) - Analyzes insurance claims to determine extent of insurance carrier's liability and settles claims with claimants in accordance with policy provisions.

Investigator (Credit Reporter) - (D.O.T. 241.267-030) - Investigates history and credit status of individual or business establishments applying for insurance or settlement of claims. Related jobs are found in savings and loans, investment houses, and stock exchanges.

Safety Inspector - (D.O.T. 168.167-078) - Inspects insured property to evaluate condition of safety and to promote safety programs.

Actuary - (D.O.T. 020.167-010) - Applies knowledge of mathematics, probability, statistics, principles of finance, and insurance data for company regarding rates and distribution of dividends.

Claims Adjuster - (D.O.T. 241.217-010) - Investigates claims for loss or damages, both inside and outside court jurisdiction.

Insurance Sales Agent - (D.O.T. 250.257-010) - Sells insurance to new and present clients. Recommends amount of type of coverage. Specializes in types of insurance such as fire, life, auto, and marine insurance.

Bordereau Clerk - (D.O.T. 203.382-010) - Prepares application for insurance on property in which company has interests.

Insurance Checker - (D.O.T. 219.482-014) - Verifies accuracy of insurance records as required by regulations.

REAL ESTATE

Real Estate Sales Agent - (D.O.T. 250.357-018) - Rents, buys, and sells property for clients on commission basis.

Real Estate Appraiser - (D.O.T. 191.267-010) - Attempts to obtain a just and fair valuation of a parcel of real estate.

Escrow Clerk - (D.O.T. 249.382-010) - Prepares legal papers and other documents affecting title to real estate. Insures conformances of loan documents to escrow instructions, policy, and legal requirements. Obtains title and hazard insurance policies and computes fees, charges, and mortgage settlement figures.

Real-Estate Clerk - (D.O.T. 219.362-046) - Maintains records concerned with rental, sale, and management of real estate.

Mortgage Closing Clerk - (D.O.T. 219.362-038) - Completes mortgage transactions between loan establishment, sellers, and borrowers after loan has been approved.

Real Estate Posting Clerk - (D.O.T. 216.587-014) - Records business transactions in journals, ledgers, and on special forms.

Business Opportunity and Property Investment Broker - (D.O.T. 189.157-010) - Buys and sells business enterprises or investment property on speculation or commission basis. Must be licensed by state.

Residence Leasing Agent - (D.O.T. 250.357-014) - Shows and rents apartments, condominiums, homes, or mobile home lots to prospective tenants.

Instructor, Extension Work - (D.O.T. 090.227-018) - Instructs in specialized area of real estate.

OFFICE (CLERICAL)

Clerk, General Office - (D.O.T. 219.362-010) - Compiles and maintains records of business transactions and office activities of establishment, performs a variety of clerical duties and utilizes knowledge of systems and procedures.

Clerk, General - (D.O.T. 209.562-010) - Performs clerical duties not requiring knowledge of systems or procedures. Writes or types bills. Proofreads records or forms. Addresses envelopes or packages by hand or with typewriter. Stamps, sorts, and distributes mail. Operates office duplicating equipment.

Clerk-Typist - (D.O.T. 203.362-010) - Performs general office clerical duties, requiring use of typewriter.

File Clerk - (D.O.T. 206.362-010) - Files correspondence, reads incoming material, and sorts according to file system. Locates and removes material from files when requested. Keeps control record of filing material.

Tax Clerk - (D.O.T. 219.487-010) - Computes state or federal taxes on sales transactions, production processes, or articles produced. Keeps records of amount due and paid.

Mail Clerk - (D.O.T. 209.587-026) - Sorts incoming mail for distribution. Dispatches outgoing mail for delivery.

Router - (D.O.T. 222.587-038) - Stamps, stencils, letters, or tags packages, boxes, or lots of merchandise to indicate delivery date. Determines routes by using standard charts.

Shipping and Receiving Clerk - (D.O.T. 222.387-050) - Verifies and keeps records on incoming and outgoing shipments and prepares items for shipment.

Order Clerk - (D.O.T. 249.367-054) - Processes orders for material or merchandise received by mail, telephone, or personal customer or company.

Duplicating Machine Operator - (D.O.T. 207.682-014) - Operates duplicating machine to print typewritten or handwritten matter directly from master copy.

Transcribing Machine Operator - (D.O.T. 203.582-058) - Transcribes letters, reports, and other recorded data. Uses transcribing machine and typewriter.

Receptionist - (D.O.T. 237.367-038) - Receives clients or customers coming into establishment. Ascertains their wants and directs them accordingly. Makes appointments.

Messenger - (D.O.T. 230-667-010) - Delivers messages, documents, packages, and other items to offices or departments within establishment or to other business concerns.

Timekeeper - (D.O.T. 215.367-022) - Keeps daily record of arrival and departure time of employees. May locate workers on job at various times. May pay employees. Calculates time worked, wages, and units produced.

Typist - (D.O.T. 203.582-066) - Does copy work from rough draft to typewritten material. Majority of duties require use of typewriter. This is one of the basic jobs in the job family area office.

Cashier - (D.O.T. 211.462-010) - Accepts money. Operates cash register. Posesses high degree of finger and eye dexterity. Displays tact. May answer telephone inquiries, restock shelves, and price merchandise.

UNIT IV

BUSINESS AND OFFICE
ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 15 occupations listed below in the Word Find. Look across, down, diagonally, and backwards.

Accounting Clerk
Consultant (Management)*
Legal Secretary
Router
Loan Officer
Teller
Business Programmer
Real-Estate Clerk
File Clerk
Controller
Systems (Analyst)*
Job Analyst
Data Typist
Actuary
Court Clerk

*Words in parentheses will not be found in the word find.

V	K	R	E	L	C	T	R	U	O	C	O	N	S	U	L	T	A	N	T
B	G	A	U	B	V	C	Y	H	D	Z	F	R	X	P	Z	O	O	N	Q
U	A	D	I	L	E	G	A	L	S	E	C	R	E	T	A	R	Y	P	B
S	Y	S	T	E	M	S	S	O	R	T	X	L	F	C	M	W	D	Y	S
I	F	H	C	B	G	A	J	K	T	S	Y	K	I	Z	I	F	Q	R	L
N	P	R	E	A	L	E	S	T	A	T	E	C	L	E	R	K	W	M	G
E	A	E	N	U	E	B	S	U	H	Q	T	L	E	V	S	F	U	K	Y
S	Y	L	C	K	L	O	A	N	O	F	F	I	C	E	R	X	A	Z	C
S	Z	L	J	W	O	K	C	E	U	O	B	G	L	Y	B	D	R	D	Q
P	F	O	X	E	L	V	T	N	D	O	D	B	E	H	I	A	C	H	I
R	F	R	G	E	U	G	U	J	M	K	Z	I	R	C	L	T	J	Q	D
O	H	T	H	V	F	I	A	O	Q	A	P	R	K	J	R	A	I	K	H
G	H	N	I	F	J	W	R	B	R	F	P	A	G	O	S	T	E	P	L
R	Y	O	X	N	L	U	Y	A	E	J	M	D	S	Q	C	Y	T	B	P
A	C	C	O	U	N	T	I	N	G	C	L	E	R	K	I	P	K	G	O
M	G	T	N	I	E	G	A	A	V	S	Z	M	U	O	Y	I	J	T	R
M	V	P	K	L	M	B	S	L	T	X	U	O	H	A	U	S	M	S	Z
E	Q	O	L	V	Y	M	R	Y	N	T	N	V	C	Y	O	T	X	K	D
R	P	E	L	M	A	Q	R	S	U	E	W	S	T	Z	W	N	E	Y	U
A	R	Q	E	G	J	L	W	T	S	F	N	V	R	V	L	D	B	R	W

UNIT IV

BUSINESS AND OFFICE

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B. Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C. Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D. Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E. Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Business and Office cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. Several of the units located in the *Economic and Societal Factors Instructional Guide* may be used to portray work tasks of occupations in this cluster.

1. The employment interviewer interviews job applicants. Use **ACTIVITY SHEET 11—PARTICIPATING IN A SIMULATED JOB INTERVIEW** (page 99) located in the *Economic and Societal Factors Instructional Guide* to portray work tasks of this occupation.

2. The tax accountant completes the tax returns of individuals. To portray work tasks of this occupation, have students complete **ACTIVITY SHEET 4—COMPLETING AN INCOME TAX RETURN** (page 493) located in the *Economic and Societal Factors Instructional Guide.*

3. To portray work tasks of occupations classified in the finance job family, have students complete the activities in **UNIT V—PERSONAL MONEY MANAGEMENT** (page 341) located in the *Economic and Societal Factors Instructional Guide*.

4. To acquaint students with the effect of computers on the labor force, use **UNIT VIII—CHANGING JOBS** (page 533) of the *Economic and Societal Factors Instructional Guide*.

B. To portray work tasks of occupations classified in the clerical job family, have students duplicate materials for either you or other teachers. Have the students volunteer one lunch period to file, distribute mail, and duplicate materials for your principal. A great way to win the support of your administration!

C. The computer has created many changes in the work tasks of business and office careers. Almost every occupation in the Business and Office cluster will utilize the computer in the future. The remainder of the activities will acquaint students with the work tasks involved in occupations using the computer and will reinforce the fact that computer advances have been made in businesses and offices.

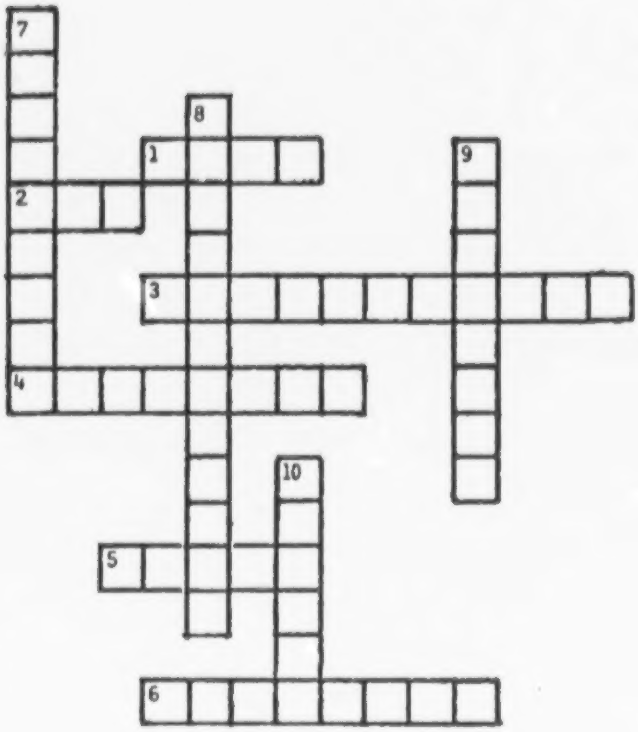
COMPUTER CROSSWORD INFORMATION SHEET

C-1 Here are some important terms to know when working with computers. Read the terms and definitions and then complete the crossword puzzle.

TERMS

1. **CPU**—central processing units; the brain of the computer
2. **Data**—a term used to describe numbers, facts, letters, symbols, names, etc.
3. **Flowchart**—the step-by-step procedure in symbols needed to run a program
4. **Hardware**—computer equipment which can be seen
5. **Input**—information or data to be entered into a computer
6. **Keyboarding**—the act of entering data using a device similar to a typewriter
7. **Magnetic media**—magnetic material on which data may be recorded (tape, discs, or film)
8. **Output**—the final results from the computer transferred to another device such as a printer
9. **Software**—all the programming systems and programs used to support a computer to achieve a desired outcome
10. **Terminal**—a device used to enter and output information

COMPUTER CROSSWORD



ACROSS

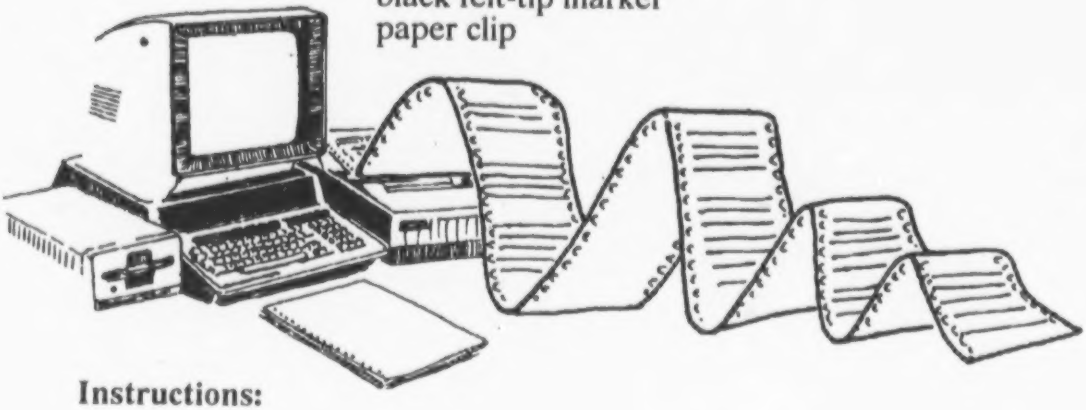
1. a term used to describe numbers, facts, letters, symbols, names, etc.
2. the "brain" of the computer
3. the act of entering data using a device similar to a typewriter
4. a device used to enter and output information
5. information or data to be entered into a computer
6. all the programming systems and programs used to support a computer to achieve a desired outcome

DOWN

7. the step-by-step procedure in symbols needed to run a program
8. one form of magnetic material on which data may be recorded
9. computer equipment which can be seen
10. the final results from the computer transferred to another device such as a printer

2. Explain that computers search their files to obtain information requested. To reinforce this point have students complete the following activity:

Materials Needed: 3" x 5" index cards, one per student
hole punch
black felt-tip marker
paper clip



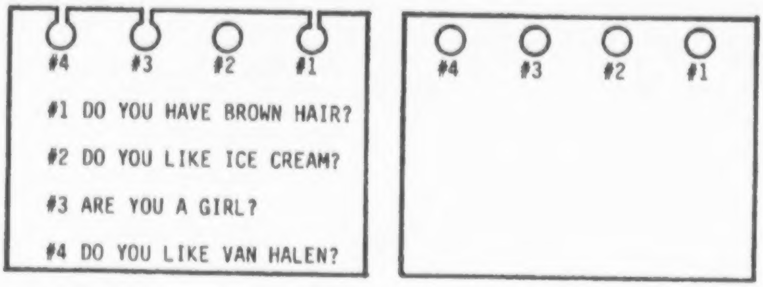
Instructions:

(1) Take index cards and make four holes, one inch apart, on one of the 5" sides of each card.

(2) Number each hole, 1-4, beginning on the right side.

(3) In the space below the holes write four questions that can be answered yes or no.

Example:



#1 DO YOU HAVE BROWN HAIR?

#2 DO YOU LIKE ICE CREAM?

#3 ARE YOU A GIRL?

#4 DO YOU LIKE VAN HALEN?

HOW TO USE IT

(1) Give one card to each student.

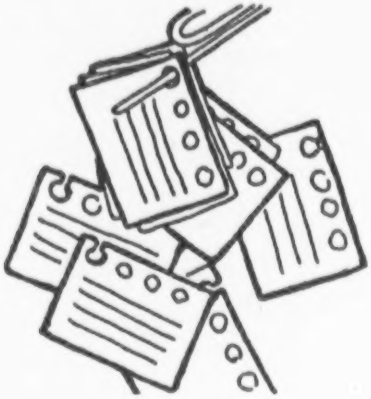
(2) Have students read each question and indicate their answer to that question on the hole of the same number. If the answer is yes, they

should cut off the top of the hole (see example). If the answer is no, they should leave the hole intact.

(3) Collect all cards, so that the holes are on the top.

(4) Take a paper clip, extend it, insert it through the first hole, (question: Do you have brown hair?) and shake so that all those which had the top of the hole cut off will fall down.

(5) All cards which fall off will belong to people who have brown hair.



(6) The same process could be used to locate all persons who like ice cream, are girls, or like Van Halen. Conduct these searches; discuss the logic in this context.

(7) Relate this process to the searching process used by computers.

3. Use either flowcharting symbols or stepwise refinement charts to describe the following processes (algorithms). You should note that there is more than one correct representation for each process.

- Making a batch of cookies
- Driving a car
- Placing a phone call
- Wrapping a gift
- Dressing

Enforce the fact that the computer does not have a brain; as such, it must be told **every step** needed in a process.

4. If possible, give students exposure to "hands on" activities with computers. As most students will be taking computer literacy in the future, you may wish to work with the computer literacy teacher in utilizing career guidance software if you do not have access to computers in your classroom. A good selling point is that one of computer literacy's essential elements is to identify computer-related careers, including training requirements.

UNIT IV

BUSINESS AND OFFICE
UNIT TEST

A. Name five occupations classified in the Business and Office cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Business and Office cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

COMMUNICATIONS AND MEDIA

CRITI
DIRECTOR

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UNIT V

COMMUNICATIONS AND MEDIA

INFORMATION SHEET

I. What Is the Communications and Media Cluster?

   A. It is a group of occupations involved in the preparation and presentation of oral or written communications to the public.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Journalism**—occupations involved in writing and editing newspapers, books, and magazines

   B. **Motion Pictures**—occupations involved in making movies

   C. **Telephone and Telegraph**—occupations involved in sending and receiving messages

   D. **Recording Industry**—occupations involved in making records and tapes

   E. **Radio Television Broadcasting**—occupations involved in preparing radio and television programs

   F. **Satellite and Laser Transmission**—occupations involved in sending and receiving information over long distances

III. Examples of Occupations

JOURNALISM

General Assignments-(D.O.T. 131.267-018)-Collects and analyzes facts about newsworthy events by interview, investigation, or observation, and writes stories to prescribed editorial techniques and format.

Foreign Correspondent-(D.O.T. 131.267-018)-Reports stories, articles, and news items by mail, telephone, radio, or telegraph from locations distant from publication.

Feature Reporter-(D.O.T. 131.267-018)-Writes stories of humorous, interpretative, narrative, or otherwise subjective character, usually with emphasis placed on writing style and personal viewpoint of the reporter.

Copy Reader-(D.O.T. 132.267-014)-Edits and corrects newspaper or magazine copy. Writes headlines before printing.

Braille Proofreader-(D.O.T. 203.582.014)-Compares proof copy of Braille transcriptions with original copy. Requires thorough knowledge of Braille.

Proofreader-(D.O.T. 209.387-030)-Reads proof of type setup to detect and mark for correction of any grammatical, typographical, or compositional errors.

Columnist-(D.O.T. 131.067.010)-Writes feature column based on personal observations and experience with subject matter. May specialize in areas such as sports, fashions.

Editorial Writer-(D.O.T. 131.067.022)-Writes comments on topics of current interest to stimulate or mold public opinion in accordance with viewpoints and policies of publication.

Critic-(D.O.T. 131.067.018)-Writes critical reviews of literary or artistic works for newspapers or periodicals. May specialize in areas such as drama, movies, music.

Reader, First-(D.O.T. 131.087.014)-Reads submitted magazine manuscripts to select those suited for publication on basis of literary merit and probable reader interest.

Crossword Puzzle Maker-(D.O.T. 139.087.010)-Devises and creates crossword puzzles for publication.

Librarian-(D.O.T. 100.367.022)-Keeps file of news items, microfilm, and other material for use by editorial and reportorial staff.

Editor, Managing, Newspaper-(D.O.T. 132.017.010)-Negotiates with newspaper owner's representative to establish publication policies, and directs editorial activities of newspaper departments.

Editor, Department-(D.O.T. 132.037.018)-Coordinates activities of publication's news or feature departments and supervises reporters engaged in gathering, writing, and publishing one specific type of news.

Editor, Book-(D.O.T. 132.067.014)-Interviews authors, suggests changes in book manuscripts, and negotiates with authors regarding details of publication.

MOTION PICTURES

Producer-(D.O.T. 187.167-014)-Coordinates writers, directors, and editors. Establishes budget and engages key actors and production staff members.

Director-(D.O.T. 159.067-010)-Directs cast and crew members during rehearsals and filming. Distributes parts, explains desired interpretations, gives critiques, and suggests changes.

Director, Research-(D.O.T. 052.167-010)-Researches and then advises director concerning historical details of subject to be filmed.

Director, Music-(D.O.T. 152.047-018)-Supervises personnel in studio music department and conducts studio orchestra.

Director, Casting-(D.O.T. 159.267-010)-Auditions and interviews performers for specific parts. Submits report to director for final selection.

Screen (Script) Writer-(D.O.T. 131.087-018)-Writes stories, adaptations, or scenarios.

Continuity Writer-(D.O.T. 131.087-010)-Writes sequence of scenes in photoplays, arranging scenes to provide action continuity to series of events being portrayed.

Gag Writer-(D.O.T. 131.087-018)-Writes humorous dialogue, jokes.

Cartoonist, Motion Pictures-(D.O.T. 141.081-010)-Draws cartoons in sequence to portray animation of characters, of wind, fire, rain, or of background layouts.

Inker and Opaquer-(D.O.T. 970.681-018)-Traces drawings of cartoonists and paints tracing to render them opaque.

Painter, Animated Cartoons-(D.O.T. 970.681-026)-Applies paint on celluloids to depict characters and background.

Camera Operator-(D.O.T. 143.062-022)-Directs camera work, informs electrician of lighting needs, determines type of equipment needed, sets up cameras, focuses, and operates power-driven camera to follow action.

Camera Operator, Animation-(D.O.T. 143.382-010)-Operates special cameras to make animated cartoons.

Camera Operator, Special Effects-(D.O.T. 143.062-022)-Photographs still and action scenes on miniature sets. When developed and incorporated in sequence, these create realistic images of action supposedly occurring.

Dubbing Machine Operator-(D.O.T. 962.665-010)-Tends film dubbing machines that play back recordings to facilitate sound and picture synchronization.

Electrician, Chief-(D.O.T. 824.137-010)-Supervises and coordinates installation, maintenance, and operation of all electrical lighting equipment.

Machinist, Motion Picture Equipment-(D.O.T. 714.281-018)-Repairs and services mechanical parts of photographing, projecting, editing, sound recording, and power equipment.

Microphone Boom Operator-(D.O.T. 962.384-010)-Moves boom according to script and position of performers.

Motion Picture Projectionist-(D.O.T. 960.362-010)-Sets up and operates motion picture projection equipment.

Motor Power Connector-(D.O.T. 962.684-018)-Connects camera and sound motors to power source and maintains equipment during use.

Light Technician-(D.O.T. 962.362-014)-Positions and operates overhead and floor lights during filming.

Recordist-(D.O.T. 962.382-010)-Controls recording equipment of sound that originates on set.

Sound Cutter-(D.O.T. 962.382-014)-Edits and synchronizes music, dialogue, and sound effects of film into single-sound print.

Sound Mixer-(D.O.T. 194.262-018)-Operates console to regulate volume level and quality of sound during filming.

Chemical Mixer-(D.O.T. 550.485-010)-Mixes chemicals and liquids to prepare solution for processing exposed film.

Densitometrist-(D.O.T. 976.381-010)-Determines photographic density of motion picture film.

Developing-Machine Tender-(D.O.T. 976.685-018)-Tends machine that develops exposed film.

Film Inspector I-(D.O.T. 976.684-014)-Inspects film prints for defects prior to shipment.

Film Laboratory Technician-(D.O.T. 976.684-014)-Builds and repairs processing machinery and tools.

Film Librarian-(D.O.T. 222.367-026)-Keeps library of stock and processed films for future reference.

Film Loader-(D.O.T. 962.687-014)-Loads and unloads film in film magazines for use in camera.

Film Numberer-(D.O.T. 976.685-018)-Tends film numbering machine that prints footage of rolls of negative film on edge of film to facilitate further processing.

Film Printer-(D.O.T. 976.682-010)-Operates film printing machine whereby image on negative motion picture film is printed on positive film.

Film Splicer-(D.O.T. 976.684-014)-Splices ends of film together to make a continuous reel.

Costumer-(D.O.T. 346.261-010)-Designs and selects costumes for cast according to period style and characters to be portrayed. Fits costumes.

Make-up Artist-(D.O.T. 333.071-010)-Analyzes production requirements and applies make-up to alter actors/actresses' appearances in accord with their roles.

Ager-(D.O.T. 840.681-010)-Paints and burns surfaces to make them look old, worn, charred.

Prop Maker-(D.O.T. 962.281-010)-Fabricates props, miniatures, and sets from various materials. Analyzes and works from designs and blueprints. Rigs and controls moving elements that depict action.

Grip Boss-(D.O.T. 962.137-010)-Supervises and coordinates activities of crew engaged in moving stage sets and equipment to, from, and in studios and locations.

Painter, Stage Settings-(D.O.T. 840.681-010)-Paints walls, furniture, etc., of sets.

Set Decorator-(D.O.T. 142.061-042)-Coordinates decoration of sets.

Special Effects Specialist-(D.O.T. 962.281.018)-Operates special effects equipment such as wind and fog machines.

Miniature Set Constructor-(D.O.T. 962.381-018)-Constructs miniature models according to scale.

Scenic Artist-(D.O.T. 144.061.010)-Paints scenery, backdrops of sets, etc.

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TELEPHONE AND TELEGRAPH

Outside Plant Engineer-(D.O.T. 003.167-042)-Plans and prepares designs for handling of wire, cable, and conduit of radio/television and other communications facilities and equipment.

Transmission and Protection Engineer-(D.O.T. 003.167-066)-Plans telephone transmitting facilities from engineering sketches. Provides engineering service for protection of telephone service and facilities.

Manager, Customer Service-(D.O.T. 168.167-058)-Directs activities concerned with investigation and processing of claims for property damage or financial loss sustained as result of alleged telegraph service negligence.

Public Message Service Supervisor-(D.O.T. 239.137-026)-Promotes goodwill and interest in telephone services. Organizes programs and designs visual aids.

Regulatory Administrator-(D.O.T. 168.167-010)-Directs activities concerned with investigating complaints from telephone subscribers and Public Utility Commission.

Telegraphic-Typewriter Operator-(D.O.T. 203.582-050)-Operates telegraphic typewriter to send and receive messages.

Telephone Operator-(D.O.T. 235.462-010)-Operates cord or cordless switchboard to relay incoming, outgoing, and/or interoffice calls.

Equipment Inspector-(D.O.T. 822.261-014)-Inspects layout and equipment of a telegraph office to determine extent of construction, replacement, or modification required to maintain or improve efficiency of installation.

Line Inspector-(D.O.T. 822.267-010)-Inspects lines and cables to determine needs to maintain communication efficiency.

Line Repairer-(D.O.T. 822.381-014)-Installs and repairs telephone and telegraph lines, both above and under ground.

Testing and Regulating Technician-(D.O.T 822.261-026)-Tests and adjusts telegraph repeaters and terminal apparatus to maintain continuity of service.

Assignment Clerk-(D.O.T 219.387-010)-Assigns line, cable, and central office facilities used in providing and maintaining telephone and telegraph services.

Dispatcher-(D.O.T. 822.361-030)-Estimates and re-routes telegraph cable circuits to insure flow of messages.

Tree Trimmer-(D.O.T. 408.664-010)-Trims trees to clear communication lines right-of-way.

RECORDING INDUSTRY

Musician, Instrumental-(D.O.T. 152.041-010)-Plays one or more musical instruments as a member of a musical group. Reads scores. May improvise or transpose music.

Singer-(D.O.T. 152.047-022)-Gives expression to harmony, melody, and rhythm or music by means of human voice. Reads scores. May improvise or transpose music.

Composer-(D.O.T. 152.067-014)-Creates and writes musical compositions. Invents melodic, harmonic, and rhythmic structures.

Lyricist-(D.O.T. 131.067-034)-Writes words to be sung to accompaniment of music.

Arranger-(D.O.T. 152.067-010)-Transcribes musical compositions to create a particular style for orchestra, band, choral group or individual.

Director, Music-(D.O.T. 152.047-018)-Supervises personnel in studio music department. Formulates job assignments and schedules.

Producer-(D.O.T. 159.117-010)-Responsible for quality of production. Must be an expert musician. Oversees all phases of production.

Chief Engineer-(D.O.T. 003.167-030)-Responsible for and manages duties of entire engineering staff.

RADIO TELEVISION BROADCASTING

Many of the occupations involved in radio and television broadcast production can also be found under the motion pictures section previously mentioned.

Copyright Expert-(D.O.T. 249.267-010)-Examines script of radio and television musical program to be broadcast to make sure permission has been secured for use of copyrighted materials.

Announcer/Broadcaster-(D.O.T. 159.147-010)-Introduces programs, identifies stations, interviews guests, describes public events. May be designated according to area of work as radio announcer; television announcer; disk jockey; sportscaster; international broadcaster, etc.

Audio Operator-(D.O.T. 194.262-010)-Controls audio equipment to regulate volume level and quality of sound during television broadcasts.

Broadcast Checker-(D.O.T. 249.387-010)-Monitors radio and television programs to detect contractual violations.

Video Operator-(D.O.T. 194.282-010)-Controls video console to regulate transmission of television scenes.

Video Recording Engineer-(D.O.T. 194.362-010)-Controls equipment to photograph television images from video screen, record sound of broadcast, and develop and edit film for rebroadcast.

Traffic Engineer-(D.O.T. 003.187-014)-Compiles records of radio and television programs transmitted over network.

Radio Engineer-(D.O.T. 193.262-026)-Operates and maintains station audio and video transmission equipment in compliance with federal regulations.

Transmission Engineer-(D.O.T. 193.262-038)-Maintains technical standards of broadcasting equipment by conducting tests, planning maintenance, and testing new or modified equipment and techniques.

Station Relations Contact Representative-(D.O.T. 184.167-134)-Coordinates activities involved in program presentations between network and independently owned radio and television stations comprising network.

Television Schedule Coordinator-(D.O.T. 199.287-010)-Prepares daily operation schedules and advance program log for newspaper, magazines, and traffic department.

Radio Repairer-(D.O.T. 720.281-010)-Repairs radio receivers and other electronic-audio equipment, using circuit diagrams and test meters.

Television Installer-(D.O.T. 823.361-010)-Installs and adjusts television receivers and antennas.

Television Repairer-(D.O.T. 720.281-018)-Repairs and adjusts radios and television receivers, using hand tools and electronic testing instruments.

SATELLITE AND LASER TRANSMISSION

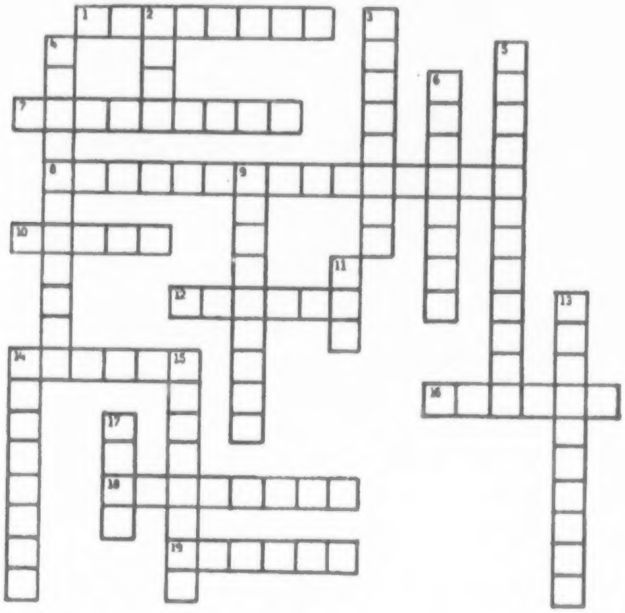
The ultimate potential for satellite and laser transmission is unknown. The consumer is purchasing the satellite dish antennas for home use at a rapid rate. At the time the *Dictionary of Occupational Titles* was printed (1977), however, occupations involved in the designing, manufacturing, and selling of the satellite dish antennas were not established. Many of the occupations dealing with electronics will be involved in the manufacturing of these antennas and, in addition, occupations dealing with the selling of these antennas are expected to expand rapidly. If you are interested in the occupations related to this new and emerging area, 1) check your local telephone book yellow pages for businesses in your area that are related to this field, 2) talk to the manager of the company about the occupations involved in the manufacturing and selling of the product.

UNIT V

COMMUNICATIONS AND MEDIA

ACTIVITY SHEET 1—CROSSWORD PUZZLE

Directions: Use Section III of the information sheet to assist you in completing the crossword puzzle below.



ACROSS

1. Collects and writes news stories for publication or broadcast
7. Operates cord or cordless switch board to relay calls; _________ operator
8. Compiles records of radio and television programs transmitted over network
10. Controls video console for television scenes; _________ operator

DOWN

2. Fabricates props; _________maker
3. Writes words to be sung to accompaniment of music
4. Trims trees to clear communication lines
5. Installs and repairs telephone and telegraph lines
6. Directs cast and crew

12. Operates power-driven camera to follow action; __________ operator

14. Writes critical reviews of literary or artistic works

16. Writes stories, adaptations, or scenarios; __________writer

18. Coordinates writers, directors, and editors

19. Negotiates with newspaper owner's representative; directs editorial activities; supervises reporters

9. Writes feature column

11. Writes humorous dialogue; __________writer

13. Estimates and re-routes telegraph cable circuits

14. Designs and selects costumes for cast

15. Creates and writes musical compositions

17. Edits and corrects newspaper; writes headlines before printing; __________reader

UNIT V

COMMUNICATIONS AND MEDIA
ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in Supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F.	Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.	Choose from the activities in supplementary section 4.
G.	Identify and apply basic academic skills relevant to the duties of a variety of careers.	
H.	Exhibit productive work habits and attitudes.	

The list of examples of occupations classified in the Communications and Media cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT V

COMMUNICATIONS AND MEDIA

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. The activities listed in this section will acquaint students with the work tasks of occupations classified in the journalism and radio/television broadcasting job families. The number of students you have, the resources you have available, and the time you have allotted will determine which occupations can be utilized. The following are examples of occupations that may be used in the activities.

Sports writers
Broadcasters
Interviewers
Camera Operators
Photographers
Commentators
Editors
Artists (for programs)
Typists
Advertising Sales Representatives
Directors
Producers
Props Manager
Reporters
Video Recording Engineers
Newscasters
Maintenance Engineers
Lyricists
Musicians
Singers
Announcers
Microphone Operators
Lighting Technicians
Actors and Actresses
Recordists (for commercials)
Make-up Artists

SPORTS EVENT COVERAGE

1. Explain that many people, other than the athletes, are involved in sporting events.

2. Prior to this activity, have the students watch the coverage of a sports event on television.

   a. Ask them what occupations they observed.

   b. Ask them what information is conveyed to the audience.

3. The following are examples of information usually addressed in the coverage of sports events:

   a. Pre-game show (teams' past performances, etc.)

    b. "Spot-lights" of athletes
    c. Play-by-play commentary
    d. Locker room interviews

4. Decide on a sports event at your school to cover.

5. Before assigning occupations to the students, decide how you will broadcast your coverage.

    a. Actual television and/or radio stations in your area—although this method will require a great deal of planning and preparation, it will give your students the most realistic perception of the responsibilities and job tasks of occupations in this cluster.

    b. VCR equipment—Record and play back the coverage—invite parents, other students, community members, etc. A great way to publicize your program!

    c. Cassette players—Record the coverage—certain broadcast methods will need to be improvised if this method is used.

6. Using the list of examples of occupations previously mentioned, have students choose, or you assign, occupations to them.

7. Have the students research the work tasks involved in their occupations, if possible, take a field trip to a radio and/or television station. The students should be given the opportunity to ask specific question concerning the responsibilities of the occupation they will portray.

8. Plan the segments you will cover; i.e., pre-game show, interviews, etc.

9. Rehearse the broadcast.

10. Programs could be developed and sold to defray the cost of producing the broadcast. In addition, advertisements could be sold to local merchants. Athletes' names and other information should be included.

11. After viewing the broadcast, students should be asked to report on the occupation they held. Personal experiences, likes, dislikes, etc. should be expressed.

WE'RE ON THE AIR

1. Prior to this activity, have the students watch or listen to the news.

   Have the students discuss the occupations needed to produce the news and the different segments of the news, for example:

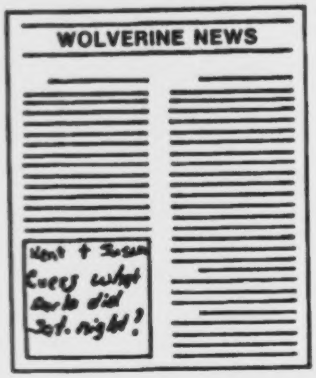
   Local news
   Foreign News
   Community news (clubs, non-profit organizations, etc.)
   Weather
   Sports
   Commercials (needed to pay for air time for the broadcast)
   Feature Stories
   Medical Reports
   Consumer Information

2. Using the list of examples of occupations for this cluster previously mentioned, assign occupations to the students.
3. News stories and other information may be gathered from newspapers and read by the students.
4. Students may use current commercials as a base for their own.
5. Allow time for the students to rehearse their broadcast.
6. Choose from the alternatives listed under the SPORTS EVENT COVERAGE for a method of broadcasting the news.
7. Allow time after the broadcast for the students to discuss the occupations they held.

MIDDLE SCHOOL NEWS

1. Have the students publish a newspaper containing news of "happenings" in your school.
2. Each student should be assigned an occupation from the list previously mentioned.
3. Visiting your local newspaper office will give the students an idea of how a newspaper is published, the format used, and the occupations involved.

4. In addition to charging students for the paper, miscellaneous space may be sold to individual students to defray the cost of producing the paper.



B. The activities in this section will acquaint students with the work tasks of occupations classified in the recording industry job family.

COMPOSE YOUR OWN SONG

1. Have students write the lyrics for a song, arrange them to music, and record the songs.
2 Have the students vote on the best songs—then have a "TOP TEN COUNT DOWN."
3. Have the students discuss the occupations needed to produce a song.

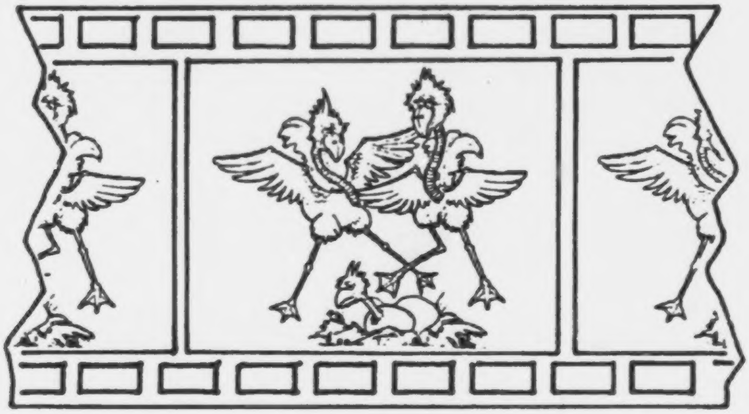
C. The activities of occupations classified in this section will acquaint students with the work tasks of occupations classified in the motion pictures job family.

CREATE YOUR OWN SOUND EFFECTS

1. Have the students create and record their own sound effects—as they would be used in a motion picture.
2. Play back each of the students' sound effects and have them guess what the sound represents.

TAKE 1

1. Have the students create their own motion picture cartoons.



2. Have the students draw and color their sketches on clear acetate.
3. Buy the slide packets in which to insert the acetate.
4. Record the audio portion of their cartoons on cassette tapes.
5. Spend one class period viewing the completed cartoons.
6. Discuss what occupations would be utilized in producing motion pictures.

UNIT V

COMMUNICATIONS AND MEDIA
UNIT TEST

A. Name five occupations classified in the Communications and Media cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Communications and Media cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

CONSTRUCTION

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UNIT VI

CONSTRUCTION
INFORMATION SHEET

I. What is the Construction Cluster?

- A. It is a group of occupations involved in all phases of the building industry.
- B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

- A. **Wood Construction**--occupations involved in building with wood and wood products
- B. **Metal Construction**—occupations involved in building with metal and metal products
- C. **Masonry Construction**—occupations involved in building with masonry and masonry products
- D. **Electrical Installation**—occupations involved in building with electrical materials and components
- E. **Finishing**—occupations involved in completing or finishing construction
- F. **Equipment Operators**—occupations involved in using and maintaining heavy construction equipment
- G. **Engineering and Support Services**—occupations involved in providing technical assistance in the building industry

III. Examples of Occupations

WOOD CONSTRUCTION

Cofferdam-Construction Supervisor-(D.O.T. 860.131.-018)-Directs contact with carpenters actually involved in construction of cofferdam in area of dam site.

Form-Building Supervisor-(D.O.T. 860.131-018)-Supervises carpenters in securing materials required for construction of wooden forms to mold concrete.

Timbering Supervisor-(D.O.T. 860.131-018)-Supervises and coordinates activities of rough carpenters engaged in construction or installation of structures or shoring with heavy planks or posts (timbers).

Carpenter-Form-(D.O.T. 860.381-046)-Constructs, erects, installs, and repairs wooden structures and fixtures.

Carpenter, Maintenance-(D.O.T. 860.281-010)-Constructs and repairs structural woodwork and equipment in an establishment, or as self-employed, working from blueprints, drawings or verbal instructions.

Carpenter, Refrigerator-(D.O.T. 860.381-022)-Performs carpentry in construction of walk-in freezers and environmental test chambers.

Carpenter, Bridge-(D.O.T. 860.381-030)-Constructs, erects, installs, and repairs bridges, trestles, and tunnel supports.

Carpenter, Rough-(D.O.T. 860.381-042)-Builds rough wooden structures, such as concrete forms, scaffolds, tunnel and sewer supports and temporary frame shelters, according to sketches or verbal instructions.

Carpenter, Packing-(D.O.T. 920.484-010)-Fabricates wooden crates or boxes using woodworking hand tools and power tools, and packs machinery, vehicles, or other large or odd shaped products.

Band-Scroll-Saw Operator-(D.O.T. 667.682-010)-Operates bandsaw to saw curved or irregular designs on wooden stock. Installs jigs and attachments to rip stock to size.

Batterboard Setter-(D.O.T. 869.664-014)-Positions batterboards (horizontal boards used in construction to indicate desired levels and for attaching string to mark grades) to indicate direction of cut of power shovel or trenching machine. Determines height of batterboard from engineering data.

Laborer, Carpentry-(D.O.T. 869.664-014)-Assists carpenter in building wooden structures.

Carpenter Helper, Hardwood Flooring-(D.O.T. 869.687-026)-Assists in laying hardwood flooring on subfloor surface.

METAL CONSTRUCTION

Pipe Fitter-(D.O.T. 862.381-018)-Lays out, fabricates, assembles, installs, and maintains piping and piping systems, fixtures, and equipment for steam, hot water, heating, cooling, lubricating and industrial processing systems on the basis of knowledge of system operation and study of building plans or working drawings.

Boilermaker-(D.O.T. 805.261-014)-Assembles and analyzes defects in and repairs boilers, pressure vessels, tanks, and vats in the field.

Plumber-(D.O.T. 862.381-030)-Assembles, installs and repairs pipes, fittings, and fixtures of heating, water, and drainage systems.

Structural-Steel Worker-(D.O.T. 801.361-014)-Performs any combination of the following duties to raise, place and unite girders, columns, and other structural-steel members to form completed structures or structure frameworks, working as a member of a crew.

Rigger-(D.O.T. 869.683-014)-Operates power winch, equipped with cathead, to haul and slack ropes and cables to move barge or skid-mounted piledriver into position and hold piledriver leads in position for driving piling at angles.

Riveter, Hydraulic-(D.O.T. 800.662-010)-Operates hydraulic riveting machine to rivet steel plate sections together.

Riveter, Pneumatics-(D.O.T. 800.684-014)-Rivets together parts such as structures, plates and castings, pneumatic hammer.

Reinforcing-Metal Worker-(D.O.T. 801.684-026)-Positions and secures steel bars in concrete forms to reinforce concrete.

Sheet-Metal Worker-(D.O.T. 804.281-010)-Fabricates, assembles, installs, and repairs sheet metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace casings, according to job order or blueprints.

Assembler Unit-(D.O,T. 809.681-010)-Assembles custom built metal products such as doors, windows, window screens, and metal awnings according to work orders, diagram, or layout.

Duct Installer-(D.O.T. 869.664-014)-Installs prefabricated sheet metal ducts used for heating and air conditioning purposes.

Ornamental Iron Worker-(D.O.T. 809.381-022)-Installs prefabricated ornamental ironwork, other than structural ironwork, such as metal window and door frames, motor-driven and automatic power doors, metal trim and paneling and aluminum curtain-wall frames.

Welder, Arc-(D.O.T. 810.384-914)-Welds metal parts together as specified by layout, diagram, work order, or oral instructions using electric arc-welding equipment. Turns knobs on welding unit to desired amperage.

Welder, Gas-(D.O.T. 811.684-014)-Welds metal parts together using gas welding equipment as specified by layout, welding diagram, or work order.

Welder-Fitter-(D.O.T. 819.361-010)-Positions, fits, and welds fabricated, cast, and forged components to assemble structural forms, such as machinery frames, tanks, pressure vessels, furnace shells, and building and bridge parts according to blueprints and knowledge of welding characteristics of metal.

Brazer-(D.O.T. 813.684-010)-Brazes (bonds) together components to assemble metal parts as specified by layout, work order, or blueprints using hand torch.

Automatic-Door Mechanic-(D.O.T. 829.281-010)-Installs, services, and repairs opening and closing mechanisms of automatic doors.

Millwright-(D.O.T. 638.281-018)-Installs machinery and equipment according to layout plans, blueprints and other drawings using hoists, lift trucks, hand tools, and power tools.

MASONRY CONSTRUCTION

Bricklayer-(D.O.T. 861.381-018)-Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers, and other structures.

Chimney Builder, Brick-(D.O.T.. 861.381-018)-Lays brick or tile to construct industrial smokestacks or chimneys of unusual heights.

Silo Erector-(D.O.T. 861.381-018)-Erects silos by fitting together prefabricated concrete sections constructed to fit in tongue-and-groove joints.

Marble Setter-(D.O.T, 861.381-030)-Cuts, tools, and sets marble slabs in floors and walls of buildings and repairs and polishes slabs previously set in buildings.

Monument Setter-(D.O.T. 861.381-014)-Erects stone monuments at cemetery grave sites following diagrams and written specifications.

Stonemason-(D.O.T. 861.381-038)-Builds stone structures, such as piers, walls, and abutments, or lays walks, curbstones, or special types of masonry, such as alberene.

Terrazzo Worker-(D.O.T. 861.381-046)-Applies cement, sand, pigment, and marble chips to floors, stairways, and cabinet fixtures to attain durable and decorative surfacing according to specifications.

Tile Setter-(D.O.T. 861.381-054)-Applies tile to walls, floor, ceiling, and/or promenade roof decks.

Plasterer-(D.O.T. 842.361-018)-Applies coats of plaster to interior walls, ceilings, and partitions of buildings to produce finished surface, according to blueprints, architect's drawings, or oral instructions.

Cement Mason-(D.O.T. 844.364-010)-Smooths and finishes surfaces of poured concrete floors, walls, sidewalks, or curbs to specified textures, using hand tools, including floats, trowels, and screeds.

Stucco Mason-(D.O.T. 842.381-014)-Applies waterproof, decorative covering of portland or gypsum plaster to outside of building surfaces.

ELECTRICAL INSTALLATION

Electrician-(D.O.T. 824.261-010)-Plans layout and installs and repairs wiring, electrical fixtures, apparatus, and control equipment.

Cable Puller-(D.O.T. 829.684-018)-Pulls lead-sheathed electrical cables for communication, signal, and power systems through ducts.

Calibrator-(D.O.T. 710.681-014)-Performs any combination of tasks involved in calibrating control instruments, such as thermostats, timing, and pressure-regulating devices.

Air-Conditioning Installer, Domestic-(D.O.T. 827.464-010)-Installs domestic air-conditioning units, usually ranging from 1/2 to two-ton capacity, in private residences and small business establishments.

FINISHING

Awning Hanger-(D.O.T. 869.484-010)-Attaches rigid or roll-up canvas, metal, or plastic awnings onto buildings, using hand tools and power tools.

Billboard-Erector Helper-(D.O.T. 869.664-014)-Erects wood or metal framework for use as bulletin and poster panels for outdoor advertisements.

Cupboard Builder-(D.O.T. 703.684-014)-Assembles metal cabinets.

Cabinetmaker-(D.O.T. 660.280-010)-Constructs and repairs wooden articles, such as store fixtures, office equipment, cabinets, and high grade furniture.

Carpet Layer-(D.O.T. 864.381-010)-Lays carpet and rugs.

Glazier-(D.O.T. 865.381-010)-Installs glass in windows, skylights, store fronts, and display cases, or on surfaces, such as building fronts, interior walls, ceilings, and tabletops.

Insulation Installer-(D.O.T. 869.664-014)-Fastens sheets, bat, blanket, and similar types of building insulation to walls, floors, ceilings, and partitions to prevent or reduce passage of heat, cold or sound.

Painter-(D.O.T. 840.381-010)-Applies coats of paint, varnish, stains, enamels, or lacquers to decorate and protect interior or exterior surfaces, trimmings, or fixtures.

Paperhanger-(D.O.T. 841.381-010)-Covers interior walls and ceilings of rooms with decorative wall paper or fabric.

EQUIPMENT OPERATORS

Core-Drill Operator-(D.O.T. 869.682-014)-Sets up and operates drilling equipment to drill holes in walls or slabs of concrete.

Shield Runner-(D.O.T. 850.682-010)-Turns handcrank to regulate hydraulic valves that advance jacks used to push forward tunnel shield (steel framework having cutting edge used to support overlying ground during tunnel construction).

Bulldozer Operator-(D.O.T. 850.683-010)-Operates tractor equipped with concave blade attached across front to gouge out, level, and distribute earth and to push trees and rocks from land for constructing roads and buildings or planting crops.

Lock Tender II-(D.O.T. 850.663-018)-Operates electrically powered locomotive or electrically driven winch to move narrow-gauge railroad into or out of material lock (pressurized air chamber) during tunnel construction.

Mucking-Machine Operator-(D.O.T. 850.683-026)-Operates powered shovel or scraper loader (mucking machine) to hoist earth and rock, excavated from tunnel headings, onto cars or trucks.

Power-Shovel Operator-(D.O.T. 850.683-030)-Operates power-driven machine equipped with movable shovel, to excavate and move coal, dirt, rock, sand, and other materials.

Rock-Drill Operator-(D.O.T. 850.683-034)-Operates portable wagon drill or drives tractor mounted rock-drilling machine to drill holes through hard material.

Scraper Operator-(D.O.T. 850.683-038)-Operater tractor-drawn or self-propelled scraper to move, haul, and grade earth on construction sites such as roadbeds, pitch banks, and water reservoirs.

Tower-Excavator Operator-(D.O.T. 850.683-042)-Operates power machinery to activate dragline bucket slung between portable towers or to excavate and load sand, gravel, earth, or similar material into trucks or onto conveyors.

Crushed-Stone Grader-(D.O.T. 869.687-026)-Shovels and rakes crushed stone to attain specified grade.

Concrete-Paving-Machine Operator-(D.O.T. 853.663-014)-Operates concrete paving machine to spread and smooth freshly poured concrete surfaces.

Mud-Jack Nozzle Operator-(D.O.T. 869.687-026)-Tends machine that forces grout into crevices, such as space between tunnel lining and surrounding earth, and fissures in rock foundations.

Asphalt-Paving-Machine Operator-(D.O.T. 853.663-010)-Drives machine that spreads and levels hot-mix bituminous paving material on subgrade of highways and streets. Bolts extensions to screed to adjust width, using wrenches.

Blaster-(D.O.T. 859.261-010)-Assembles, plants, and detonates charges of industrial explosives to loosen earth, rocks, and stumps, or to demolish structures to facilitate removal.

ENGINEERING AND SUPPORT SERVICES

Civil Engineer-(D.O.T. 005.061-014)-Performs a variety of engineering work in planning, designing, and overseeing construction and maintenance of structures and facilities such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units.

Construction Inspector-(D.O.T. 182.267-010)-Inspects and oversees construction of bridges, buildings, dams, highways, and other types of construction work to insure that procedures and materials comply with specification.

Clearing Supervisor-(D.O.T. 869.133-010)-Supervises and coordinates activities of work crews engaged in clearing way for structures such as buildings, bridges, highways, and pipelines.

Drafter, Civil-(D.O.T. 005.281-010)-Drafts detailed construction drawings, topographical profiles, and related maps and specification sheets used in planning and construction of highways, rivers, and harbor improvements, flood control, drainage, and other civil engineering projects.

Electrical Engineer-(D.O.T. 003.061-010)-Performs a variety of engineering work in designing, planning, and overseeing manufacture, construction, installation, operation, and maintenance of electrical or electronic components, equipment, systems, facilities, and machinery used in generation, transmission, distribution, and utilization of electrical energy for domestic, commercial, and industrial consumptions.

Safety Engineer-(D.O.T. 012.061-014)-Applies knowledge of industrial processes, mechanics, chemistry, psychology and industrial health and safety laws to prevent or correct injurious environmental conditions and minimize effects of human traits that create hazards to life and property or reduce worker morale and efficiency.

Surveyor-(D.O.T. 018.167-018)-Surveys earth's surface and oversees engineering survey party engaged in determining exact location and measurements of points, elevations, lines, areas, and contours of earth's surface to secure data used for construction, mapmaking, land valuation, mining, or other purposes.

Architect-(D.O.T. 001.061-010)-Provides professional services in research, development, design, construction, alteration, or repair of real property, such as private residences, office buildings, theaters, public buildings, or factories. Plans layout of project and integrates engineering elements into unified design. Prepares scale and full-size drawings and contract documents for building contractors.

UNIT VI

CONSTRUCTION

ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 20 occupations classified in the Construction cluster listed below in the Word Find. Look across, down, and diagonally.

A	S	H	E	E	T	M	E	T	A	L	W	O	R	K	E	R	A	B	L
A	B	C	D	S	E	E	L	E	C	T	R	I	C	I	A	N	C	D	S
P	R	O	S	H	F	G	H	L	T	I	R	S	T	J	C	A	B	S	A
B	C	A	B	I	N	E	T	M	A	K	E	R	U	D	L	Z	R	T	F
C	P	E	C	E	R	C	S	Y	L	Q	P	O	J	K	O	M	I	U	E
L	M	R	A	L	L	A	U	Y	M	K	H	D	N	E	G	T	C	C	T
M	A	X	R	D	T	I	R	Y	N	R	S	U	R	Y	L	U	K	C	Y
N	R	Q	P	R	U	G	V	G	O	L	A	E	R	Y	A	S	L	O	E
O	C	N	E	U	V	L	E	W	Y	M	Y	A	W	R	Z	D	A	M	N
E	H	H	N	N	I	A	Y	Z	E	A	N	V	D	R	I	X	Y	A	G
B	I	R	T	N	O	S	O	K	L	A	N	O	P	Q	E	T	E	S	I
E	T	S	E	E	S	E	R	T	R	I	V	E	T	E	R	I	R	O	N
R	E	T	R	R	V	R	E	E	P	C	O	D	L	Y	B	J	O	N	E
H	C	U	V	W	X	P	L	A	S	T	E	R	E	R	L	E	X	Y	E
P	T	E	N	D	R	Z	I	X	M	Z	R	A	B	E	A	E	M	Z	R
U	N	O	I	A	P	L	U	M	B	E	R	R	C	A	S	O	N	B	F
L	E	A	C	A	L	I	B	R	A	T	O	R	D	R	T	L	M	E	R
M	B	R	I	O	L	R	U	G	G	R	E	L	G	W	E	L	D	E	R
T	A	N	D	U	C	T	I	N	S	T	A	L	L	E	R	B	E	R	L
Y	T	C	I	V	I	L	E	N	G	I	N	E	E	R	V	E	E	Y	S

Sheet-metal worker
Riveter
Carpenter
Plumber
Duct installer
Bricklayer
Plasterer
Cabinetmaker
Glazier
Calibrator

Shield runner
Blaster
Civil engineer
Architect
Surveyor
Safety engineer
Carpet layer
Stucco mason
Electrician
Welder

UNIT VI

CONSTRUCTION

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F.	Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.	Choose from the activities in supplementary section 4.
G.	Identify and apply basic academic skills relevant to the duties of a variety of careers.	
H.	Exhibit productive work habits and attitudes.	

The list of examples of occupations classified in the Construction cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT VI

CONSTRUCTION

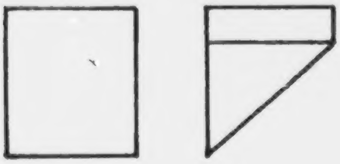
ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. **The activities in this section involve work tasks that most workers whose occupations are classified in the Construction cluster must be able to perform.**

1. Explain that most occupations classified in the Construction cluster involve following directions—both oral and written.

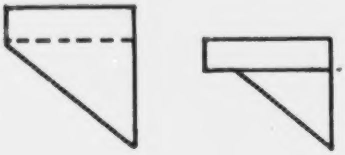
    a. Provide each student with an 8 1/2" X 11" sheet of paper.

    b. Make Diagonal Fold



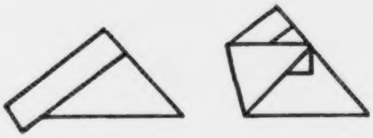
1. Place paper in writing position.
2. Fold right bottom corner up to left edge.
3. Keep edges even

    c. Fold Flap



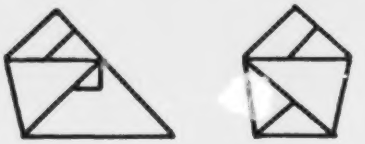
1. Turn over.
2. Keep edges even.
3. Hold firmly—crease.

    d. Make L. H. Side Fold



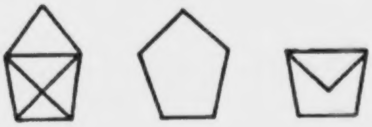
1. Rotate 1/4 to left.
2. Fold left corner toward right to edge.
3. Make top edge parallel to bottom—even.
4. Hold firmly—crease.

e. Make R. H. Side Fold



1. Fold right corner upward to left edge.
2. Match top edges.
3. Hold firmly—crease

f. Fold flaps Down

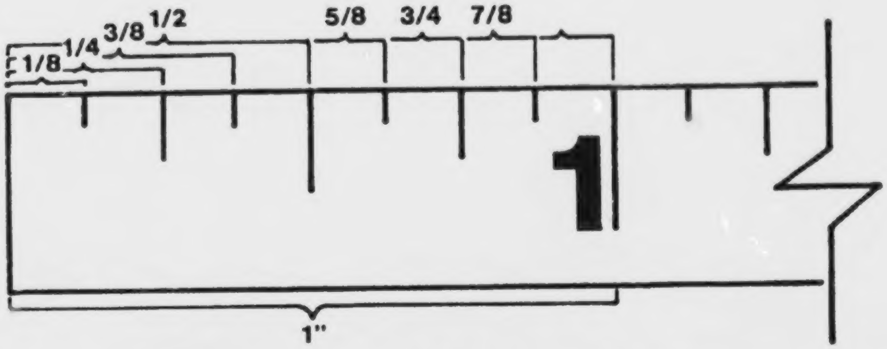


1. Tuck flap in outer fold.
2. Match edge—crease.
3. Turn over.
4. Fold down flap—match.

g. Have the students compare their drinking cups.

2. Many of the occupations in the Construction cluster involve figuring the cost of building materials, square footage, placement of building materials, etc.

   a. Explain how to read a rule using the following chart. (You may wish to duplicate the chart for each student).



   b. Provide each student with rulers and have them measure common objects in the classroom.

c. Have the students work the following problems:

   (1) What is the wall thickness of a pipe having an outside diameter of 2.146" and an inside diameter of 1.906'?

   (2) What is the weight of 200' of wire if 100' of it weighs 1.25 pounds?

   (3) A quotation of a 110.00 per 100 pounds is given for brass tubing. Find the cost of 200 pounds.

   (4) A metal strip 28.965" long is divided into five equal pieces. How long is each piece? Allow 0.095" waste for each cut. Round to three decimal places.

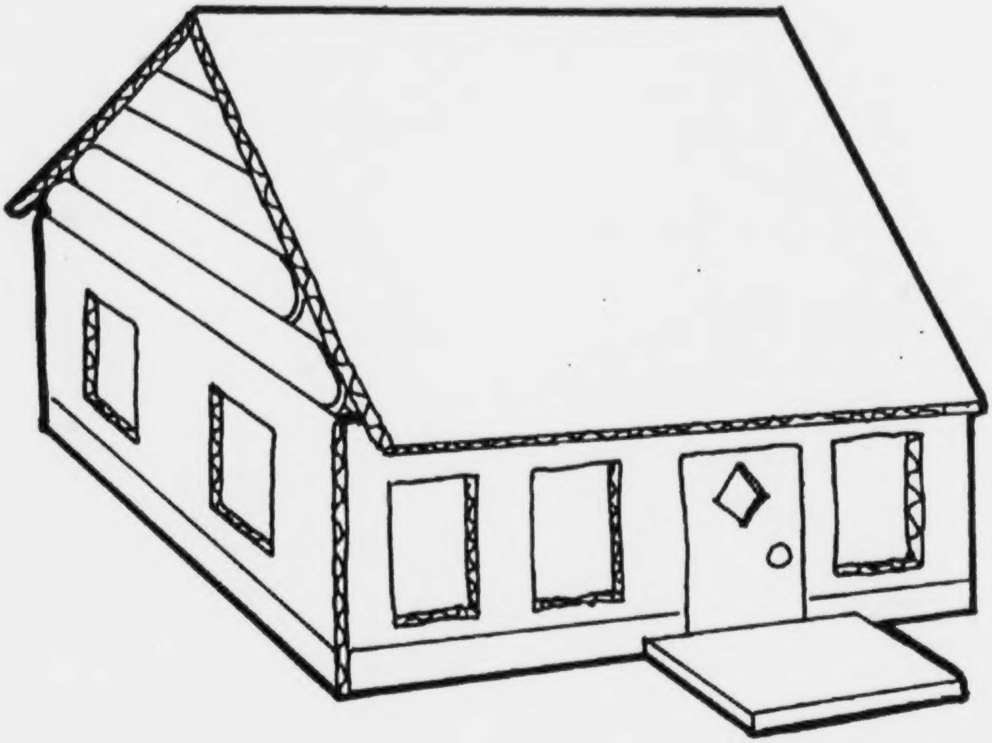
   (5) The diameter of a tapered pin is 2.1654" at one end and 1.4321" at the other end. What is the difference between the two diameters?

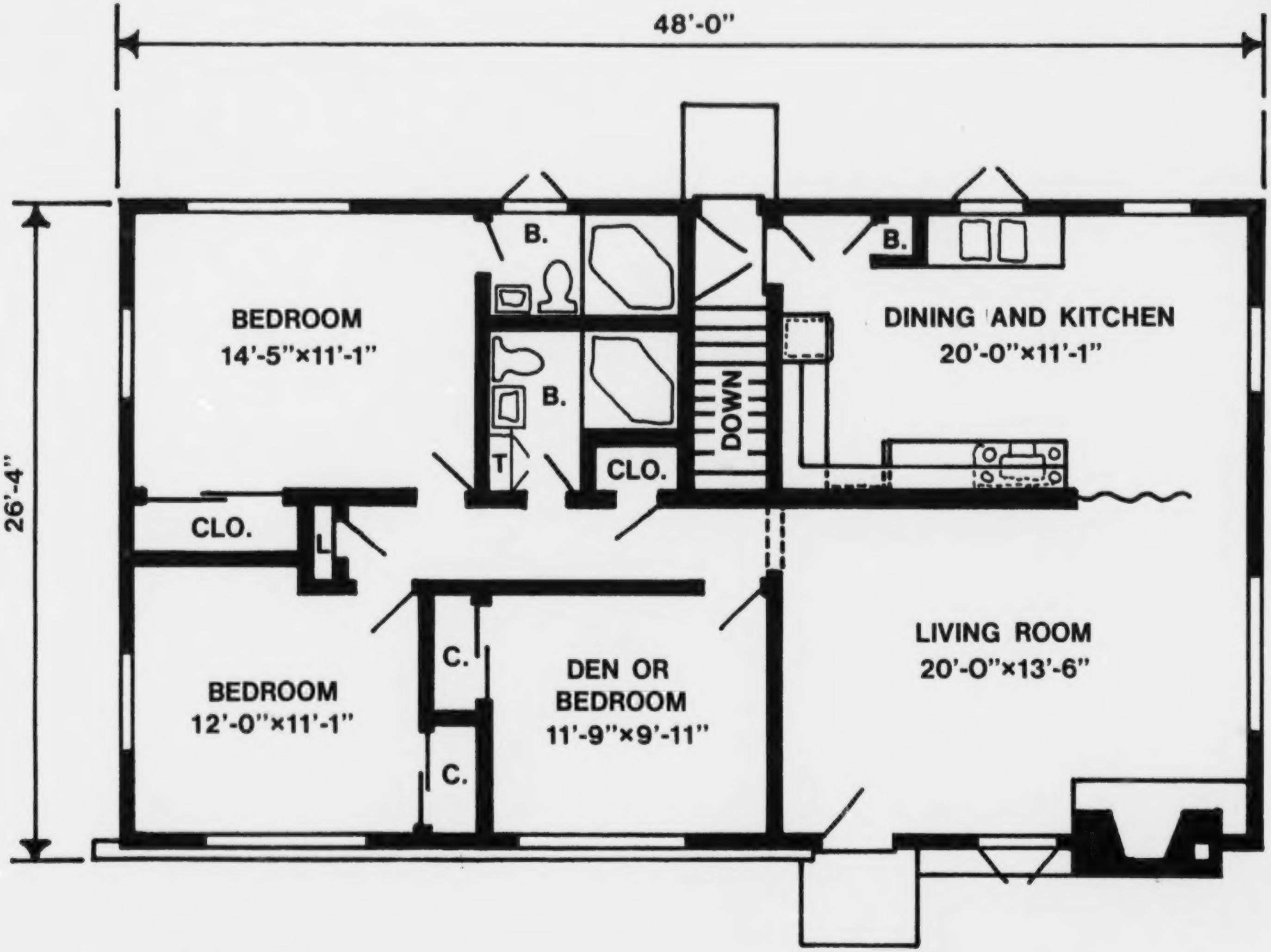
B. Have the students create floor plans for their dream homes, shopping malls, businesses, etc.

1. Explain that the first step to designing a structure is to decide what you want in it.
2. If possible, provide students with blueprints as examples.
3. Make copies of the floor plan on the following page.
4. Point out how windows, doors, bathroom fixtures, and appliances are indicated.
5. Have the students indicate room size and total square footage on their completed drawings.
6. Although graph paper is preferred, drawings can be completed on 11" X 14" drawing paper.
7. Display completed drawings.

C. **The activities listed in this section will require several hours to complete. It is suggested that career investigation programs use the activities as an outside assignment. Students could choose from the activities listed below, and completed projects could be graded according to work involved, detail, etc.**

1. Construct a model house using sugar cubes, hardboard, craft sticks, or other suitable materials.




48'-0"
26'-4"
B.
B.
BEDROOM
14'-5"×11'-1"
DINING AND KITCHEN
20'-0"×11'-1"
B.
DOWN
T
CLO.
CLO.
L
C.
C.
BEDROOM
12'-0"×11'-1"
DEN OR
BEDROOM
11'-9"×9'-11"
LIVING ROOM
20'-0"×13'-6"

2. Bring tools that are used in construction to class. Explain the function and purpose of each tool.

3. Research proper safety procedures for occupations dealing with construction. Present your findings to the class.

4. Survey the following common household items as to the wattage and voltage (usually listed on appliances and/or boxes):

	WATTAGE	VOLTAGE
a. Stereo		
b. Television		
c. Refrigerator		
d. Toaster		
e. Hand iron		
f. Washer		
g. Clothes dryer		
h. Hair dryer		
i. Central air conditioning		
j. Electric range		
k. Dishwasher		
l. Vacuum cleaner		
m. Coffeemaker		
n. Blender		
o. Water heater		

5. Select enclosing materials and finishes for the interior and exterior of a house. If possible, display actual samples of materials to be used—lumber companies usually have samples available for customers, or cut pictures of materials from catalogs and magazines and place within the squares on the chart. If some of the above are unavailable, describe the material in the blanks. The chart may be reproduced on poster board if additional space is needed.

EXTERIOR	STRUCTURE	TRIM
OUTSIDE OF HOUSE		

INTERIOR	CEILING MATERIAL	COLOR	WALL MATERIAL	COLOR	FLOORING	COLOR
DEN						
KITCHEN						
BATHROOM #1						
BEDROOM #1						
BEDROOM #2						
BEDROOM #3						
DINING ROOM						
BATHROOM #2						
UTILITY ROOM						

UNIT VI

CONSTRUCTION
UNIT TEST

A. Name five occupations classified in the Construction cluster.

1.
2.
3.
4.
5.

B. Discuss an occupation found in the Construction cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

CONSUMER AND HOMEMAKING

NUTRITIO
FOOD TESTER

UNIT VII

CONSUMER AND HOMEMAKING INFORMATION SHEET

I. What Is the Consumer and Homemaking Cluster?

   A. It is a group of occupations involved in the improvement of family living.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Food**—occupations involved in providing food and food information for consumers

   B. **Housing and Household Equipment**—occupations involved in designing and developing home interiors and home equipment

   C. **Textiles and Clothing**—occupations involved in designing and developing fabrics and clothing

   D. **Family Economics and Home Management**—occupations involved in assisting persons with home and budget management

   E. **Family Relations and Child Development**—occupations involved in studying and improving family relations and child growth

   F. **Extension Service**—occupations involved in educating groups of homemakers and youths in such subjects as the selection and care of textiles, clothing, household equipment, clothing construction, management of family finances, food preparation, child care, etc.

III. Examples of Occupations

FOOD

Food Service Supervisor - (D.O.T. 319.137-010) - Trains and supervises employees engaged in serving food and maintaining cleanliness of food service areas and equipment in public and private institutions, and commercial food establishments.

Food Chemist (Food Analyst) - (D.O.T. 022.261-014) - Conducts experiments in chemistry of foods. Experiments with natural and synthetic materials or by-products to develop new foods, food preservatives, anti-adulteration agents, and similar products.

Food Tester - (D.O.T. 029.361-014) - Mixes and cooks or bakes experimental food products, such as cake mixes or refrigerated biscuits, cookies, or rolls. Selects recipes from conventional cookbook and substitutes dehydrated ingredients for fresh where feasible.

Research Dietician - (D.O.T. 077.061-010) - Performs research in improvement of food as related to appearance, palatability, and nutritional value.

Dietician - (D.O.T. 077.117-010) - Plans and directs food service programs in public and private institutions and establishments. Plans menus and diets providing required food and nutrients to feed individuals and groups.

Food Journalist - Employed by publishers of periodicals and newspapers and by radio or television stations to originate and test recipes for publication or broadcast.

Consumer Service Specialist - Investigates consumer needs and interprets them to producer. Prepares recipe folders, booklets, cookbooks, directions on packages, and other consumer materials.

HOUSING AND HOUSEHOLD EQUIPMENT

Tester(Electric Equipment) - (D.O.T 729.684-058) - Inspects and tests household appliances such as ranges, water heaters, and food mixers, for appearance and mechanical and electrical characteristics, using testing devices and handtools.

Household Appliance Installer - (D.O.T. 827.661-010) - Installs household appliances such as refrigerators, washing machines, stoves, and related appliances in consumers' homes.

Consultant on Housing Design - Consults with home builders and architects to achieve efficient arrangements in housing.

Color Expert - (D.O.T. 141.051-010) - Advises clients on fashionable shades and color combinations in paper, paint, draperies, floor coverings and other permanent installations for furnishing interiors of homes, offices, and other commercial establishments.

Home Service Director - (Director of Home Economics) - (D.O.T. 096.161-010) - Plans, coordinates and directs consumer education service or research program for equipment, food or utility company to promote goodwill and sale of products or services.

Interior Decorator - (D.O.T. 142.051-014) - Advises client on interior design factors, such as space planning, layout and utilization of furnishings and equipment, color schemes, and color coordination.

TEXTILES AND CLOTHING

Cloth Tester(Textile Technician) - (D.O.T. 029.381-010) - Subjects cloth to standardized physical and chemical tests and compares test results with samples or prepared standards such as charts, graphs, and tables, to verify adherence to specifications.

Fashion Coordinator - (D.O.T. 185.157-010) - Coordinates promotional activities such as fashion shows to induce customer acceptance.

Wedding Consultant - (D.O.T. 299.357-018) - Compiles list of prospective brides from newspaper announcements or engagements. Mails promotional material to offer consultant services. Recommends trousseau for bride and costumes and accessories for attendants.

Sewing Machine Operator - (D.O.T. 787.682-046) - Operates sewing machine to join, gather, hem, reinforce, or decorate clothing articles.

Drapery and Upholstery Estimator - (D.O.T. 298.387-010) - Calls at customers' homes to take measurements for and estimate cost of fabricating draperies, window shades, slipcovers, and upholstery; installs draperies in customer's home.

Consumer Service Specialist - Represents company's product to consumer and interprets and relates consumer needs to company.

Educational Director - Develops new and easy sewing techniques to be incorporated in pattern and sewing books.

Fashion Journalist - Employed by publishers of periodicals and newspapers and radio and television stations to report on new fashions and fashion accessories.

FAMILY ECONOMICS AND HOME MANAGEMENT

Researcher in Home Management and Family Economics - (D.O.T. 096.121-014) - Researches such subjects as what portion of income families spend on major costs, marketing and consumption practices to determine what influences people in their purchases, family financial records to reveal what sort of records people do and should keep, the different needs of families at various stages of the life cycle, and living costs and standards.

Director of Consumer Education - Guides families in the selection and care of products on the market to help them make the most efficient use of their resources.

Budget Consultant (Family Finance Specialist) - (D.O.T. 160.207-010) - Advises customers of bank and loan companies on personal and family financial problems.

Home Management and Family Economics Journalist-Reports on subjects which promote efficient management of household and finances and sound consumerism.

FAMILY RELATIONS AND CHILD DEVELOPMENT

Nursery School Teacher - (D.O.T. 092.227-018) - Instructs children in activities designed to promote social, physical and intellectual growth in preparation for primary school in preschool, day care center, or other child-development facility.

Researcher in Child Development and Family Relations - Studies the various relationships within the family, the various factors which may have an effect on these relationships (such as size of family, economic situation, health problems, or emotional stability of family members), and how the total family environment affects the development of the children.

Family Relations and Child Development Journalist - Employed by the publishers of periodicals and newspapers and by radio and television stations to report on subjects aiding in the understanding of child development and family relations.

EXTENSION SERVICES

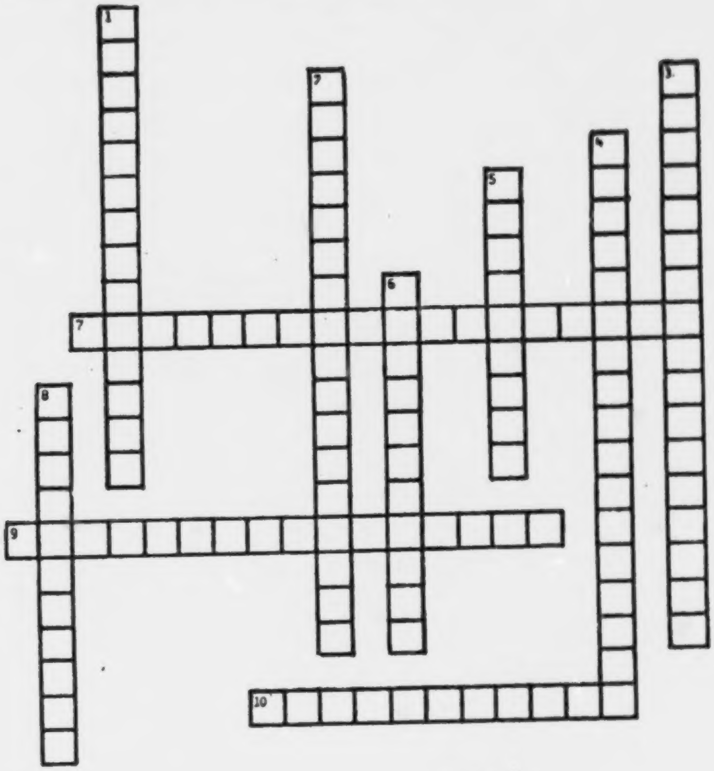
Extension Service Specialist (Home Economics) - (D.O.T. 096.127-014) - Instructs extension workers and develops specific service activities in home economics. Develops training programs in subjects such as home management.

County Home-Demonstration Agent - (D.O.T. 096.121-010) - Provides instruction and advice primarily in rural communities, in developing programs to improve farm and family life. Lectures and demonstrates techniques in such subjects.as nutrition, clothing, home management, home furnishing and child care.

UNIT VII

CONSUMER AND HOMEMAKING
ACTIVITY SHEET 1—CROSSWORD PUZZLE

Directions: Use section III of the Information Sheet to assist you in completing the crossword puzzle below.



ACROSS

7. Coordinates promotional activities such as fashion shows, to induce customer acceptance; selects garments to be shown at shows
9. Takes measurements and estimates cost of fabricating draperies, window shades; installs draperies in customers' homes

DOWN

1. Originates and tests recipes for publication or broadcast
2. Assists in preparation of weddings
3. Advises clients on interior factors
4. Advises clients on personal and family financial problems
5. Plans menus and diets

10. Subjects cloth to physical and chemical tests to verify adherence specifications

6. Conducts experiments in chemistry of foods

8. Advises clients on color combinations in paper, paint, etc.

UNIT VII

CONSUMER AND HOMEMAKING

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Consumer and Homemaking cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT VII

CONSUMER AND HOMEMAKING CLUSTER
ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. **The activities in this section will expose students to those work tasks of occupations in the food job family.**

   1. Have the students plan three meals a day for two consecutive days.
   2. Have them develop a shopping list for every item needed to prepare the meals and to find out the cost of at least six of the items.
   3. Have the students turn in their favorite recipe. Duplicate the recipes and create a C. I. Cookbook. (The cookbook could be sold as a money-making project.)
   4. Have the students create their own recipes and bring samples of their dishes to class. Have the students or teachers in your school serve as food testers. Vote on the best three dishes.

B. **The activities in this section will expose the students to work tasks of occupations classified in the Housing and Household Equipment job family.**

   1. Have the students use department store catalogs, furniture store advertisements, etc., to complete the following activity:
      a. Have the students imagine they are interior decorators.
      b. They are to decorate the following rooms: living room, master bedroom, bathroom, dining room, and one other room of their choice.
      c. They are to select the furniture design, color scheme (rugs, tile design and color, flooring, curtains, and furniture), and room accessories (lamps, pictures, telephones, knick-knacks).
      d. Have the students identify each room by writing the name in black-blocked letters.
      e. Have the students organize each group of pictures from each room neatly on a poster board and glue all items.

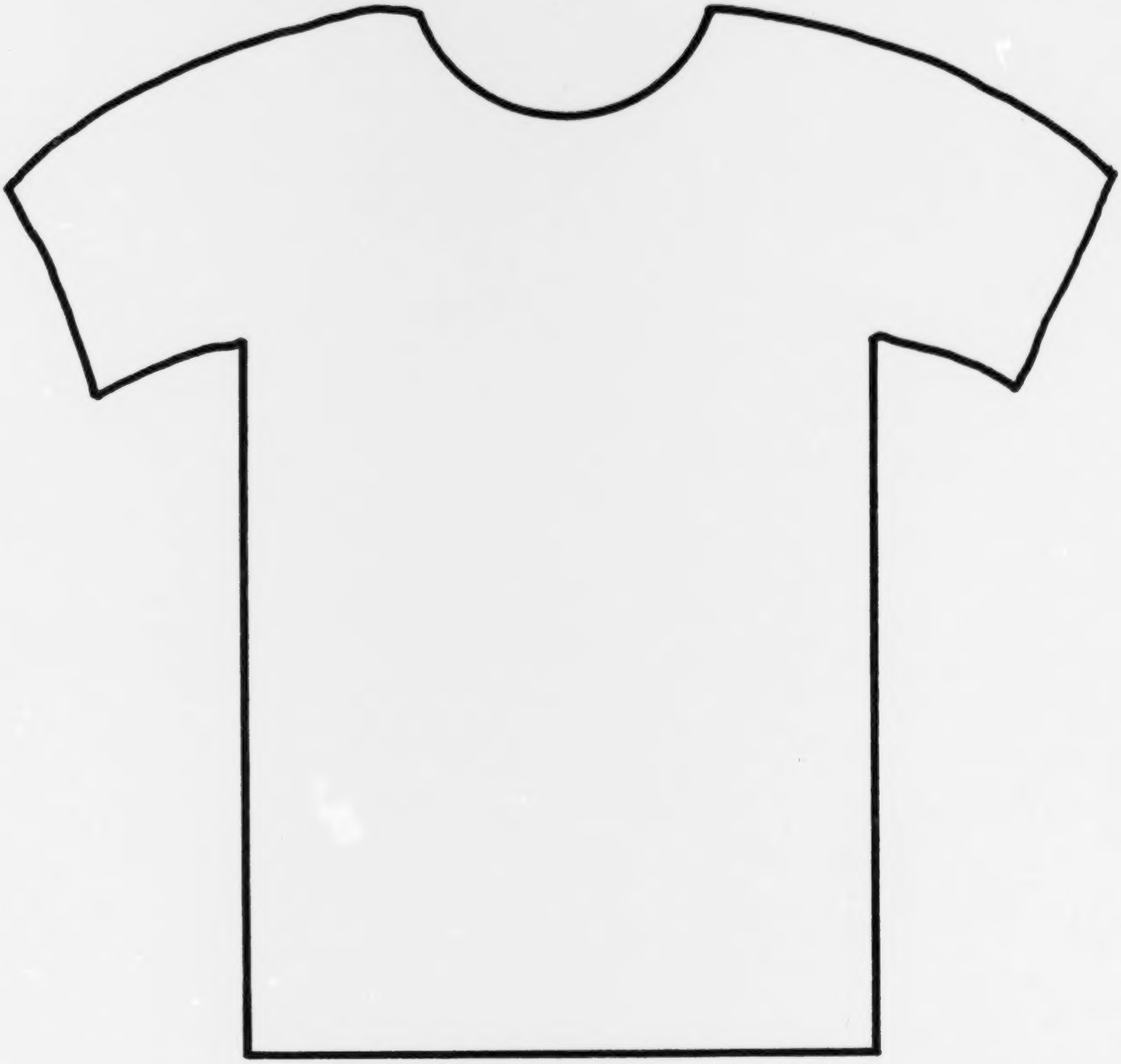
2. Prepare a color scheme for one room including color combinations in paper, paint, draperies, floor coverings, and other permanent installations.

C. **The activities in this section will expose the students to work tasks of occupations classified in the Textile and Clothing job family.**

1. Have the students design the T-Shirt on the following page.

    a. Have the students plan the design, fabric color, and any details or trim.

    b. Using felt-tip pens, actual swatches of fabric, and/or sewing notions, have them design the T-Shirt. Vote on the best design.



2. Have the students research characteristics of the following fabrics: cotton, nylon, fiberglass, wool and acrylic, and using the information, answer the following questions:

   a. The best fabric for summer heat is ____________________.

   b. Hosiery is usually made of ______________________.

   c. Ironing board covers are usually made from ______________.

   d. If you wanted to buy a sweater that would be warm, you would probably purchase a sweater made of ___________________.

   e. Most swimsuits are made of _______________________.

D. The activities listed in this section will acquaint students with the work tasks of occupations classified in the Family Economics and Home Management job family.

1. Have the students research the management of time spent on household chores in their home for one week.

   a. Have the students prepare a chart similar to the one below:

TASK	TIME ON TASK
1. Washing Dishes	
2. Washing Clothes	
3. Drying Clothes	
4. Folding Clothes	
5.	
6.	
7.	
8.	
9.	
10.	

b. Have the students share their findings. Ask the students for ideas on how to save time on household chores.

2. Have the students conduct research to determine amount spent by their families for food, clothing, housing, medical care, entertainment, utilities, etc.

   a. Refer to Unit V in the *Economic and Societal Factors Instructional Guide* for additional information and activities.

   b. Have the students prepare a monthly budget.

UNIT VII

CONSUMER AND HOMEMAKING UNIT TEST

A. Name five occupations classified in the Consumer and Homemaking Cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Consumer and Homemaking cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

ENVIRONMENT

KEEP AM
BEAUTIF
MILK SAMPLER
PEST CONTROL

UNIT VIII

ENVIRONMENT INFORMATION SHEET

I. What is the Environment Cluster?

   A. It is a group of occupations involved in the protection and conservation of nature, natural resources and inhabitants of our land.

   B. Within this cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Pollution Prevention and Control**—occupations involved in controlling the spread of undesirable materials in the environment.

   B. **Disease Prevention**—occupations involved in controlling organisms that cause nutritional deficiency or disease.

   C. **Environmental Planning**—occupations involved in planning for future population growth and increased demands on natural resources.

   D. **Resource Control**—occupations involved in regulating the use and care of natural resources.

III. Examples of Occupations

   (**NOTE:** Many of the occupations listed below can also be classified in the Agri-Business and Natural Resources cluster.)

POLLUTION PREVENTION AND CONTROL

This family deals mainly with the occupations arising from water, soil and air pollution and the efforts to measure and control them.

Air Analyst - (D.O.T. 012.261.010) - Using dust collectors, analyzes samples of air in industrial establishments or other work areas to determine amount of suspended foreign particles and effectiveness of control methods. May recommend remedial measures.

Chemist, Water Purification - (D.O.T. 022.281-014) - Analyzes water in purification plant to control chemical processes which soften it or make it suitable for drinking. Analyzes water at various stages of treatment.

Garbage-Collection Supervisor - (D.O.T. 909.137-014) - Supervises workers engaged in collecting garbage and other refuse and transporting to disposal plant and areas.

Industrial-Waste Inspector - (D.O.T. 168.267-054) - Inspects waste disposal facilities and investigates sources of pollutants in municipal sewage to insure conformance with ordinance and permit requirements. Extracts samples of waste from sewer, storm drains, and water courses for laboratory tests.

Environmental Laboratory Supervisor - Supervises chemical tests required for quality control of process of product. Reviews and records results of laboratory tests. May recommend treatment or process that would result in less contamination or waste.

Radiation Monitor - (D.O.T. 199.167-010) - Monitors personnel, plant facilities, and work environment to detect radioactive contamination. Collects air samples to determine airborne radioactivity. Gives information on dangerous levels and instructs personnel in radiation safety.

Safety and Sanitary Inspector - (D.O.T. 168.264-014) - Inspects equipment and observes work activities of employees to insure compliance with occupational safety and health regulations.

Sewage-Disposal Worker - (D.O.T. 955.687-010) - Cleans and adjusts equipment. Collects samples of decontaminated refuse for tests.

Sewage Plant Attendant - (D.O.T. 955.585-010) - Tends pumps, conveyors, chlorinators and other equipment used to decontaminate sewage waste by settling, aeration, and sludge digestion. Extracts samples and makes progress reports.

Sewage Plant Operator - (D.O.T. 955.362-010) - Operates sewage treatment, sludge processing, and disposal equipment. May extract sewage samples at various stages of treatment and perform routine laboratory tests. Checks final effluent.

Superintendent, Water and Sewer Systems - (D.O.T. 184.161-014) - Supervises installation and maintenance. Analyzes trends, such as population and industrial growth of areas. Designs plans to meet and serve community needs.

Supervisor, Water and Sewer Systems - (D.O.T. 184.167-238) - Supervises installing, maintaining, repairing, servicing, enlarging and relocating water distribution and sewage facilities. Determines feasible approach for excavating and performing repairs, using land plots, topographic maps, and diagrams.

Yield-loss Inspector - (D.O.T. 529.367-030) - Takes samples from waste water, etc., for laboratory tests. Determines product's loss in processing and possible pollution. Participates in special studies. Reviews sampling methods and procedures.

Water Tender - (D.O.T. 599.685-122) - Tests water to determine suitability and obtains water for laboratory analysis. Adds specified chemicals to obtain desired quality.

DISEASE PREVENTION

This occupational family requires personnel with a great deal of skill and/or technological training.

Entomologist - (D.O.T. 041.061-046) - Studies insects and their relation to plant and animal life. Aids in control and elimination of harmful pests such as Japanese beetles, fruit flies, gypsy and brown-tail moths, and forest insects, by developing new and improved insecticides and biological methods.

Exterminator - (D.O.T. 389.684-010) - Pest control; vermin exterminator. Sprays chemical solutions or toxic gases and sets mechanical traps to kill pests that infest buildings and surrounding areas. May clean areas, sets baits, fumigate. May be called Rodent Exterminator.

Field Health Officer - (D.O.T. 168.167-018) - Conducts research to develop inspection standards. Traces persons exposed to certain disease such as venereal disease, radiation, poisoning, etc.

Food and Drug Inspector - (D.O.T. 168.267-042) - Inspects establishments where food, drugs, cosmetics, etc., are manufactured, handled, stored or sold to enforce legal standards of sanitation, purity, and grading. Collects samples of products for bacteriological and chemical laboratory analysis.

Industrial-Health Engineer - (D.O.T. 012.167-034) - Plans industrial health program requiring application of engineering principles and technology to analyze and control conditions contributing to occupational hazards and disease.

Industrial Hygienist - (D.O.T. 079.161-010) - Conducts health program to eliminate or control occupational health hazards and diseases. Collects samples of dust, gases, vapors, and other potentially toxic materials for analysis. Performs sound level evaluations to determine relationship of noise to employee discomfort and efficiency.

Microbiologist (Food) - (D.O.T. 041.061-058) - Investigates activities of micro-organisms in manufacture, spoilage, and deterioration of food other than milk products. Determines source of contamination.

Milk Sampler - (D.O.T. 410.357-010) - Collects milk samples and ships for laboratory analysis.

Plant Pathologist - (D.O.T. 041.061-086) - Conducts research into nature, cause, and control of plant diseases and decay of plant products. Isolates disease-causing organisms. Tests control measures. Studies effects of soils, climate, and geography on outbreaks of plant diseases.

Plant-Quarantine Inspector (Agricultural Commodity Grader) - (D.O.T. 168.287-010) - Enforces quarantine and regulatory laws to prevent spread of plant diseases. Examines incoming shipments on vessels from foreign countries to prevent admission of diseased plants and animals.

Public Health Bacteriologist - (D.O.T. 041.261-010) - Conducts experiments to detect presence of harmful or pathogenic bacteria in water, food supply, or general environment of community and to control or eliminate sources of possible pollution or contagion.

Sanitarian - (D.O.T. 079.117-018) - Plans, develops and executes environmental health programs. Determines and sets health and sanitary standards and enforces regulations concerned with food processing and serving, collection and disposal of solid wastes, sewage treatment and disposal, plumbing, vector control, recreational areas, hospital and other institutions, noise, ventilation, air pollution, radiation and other areas.

Sanitary Inspector - (D.O.T. 168.267-042) - Investigates public and private establishments, such as restaurants, hotels, homes, etc., and places of public gatherings to determine compliance with or violation of sanitation laws and regulations.

ENVIRONMENTAL PLANNING

The occupations classified in this family must look at both the present environment as well as future needs and uses.

Camp-Ground Caretaker - (D.O.T. 406.687-010) - Keeps national forest camping grounds clean, disposes of garbage paper, litter, and advises campers concerning regulations.

Sanitary Engineer - (D.O.T. 005.061-030) - Designs and oversees construction and operation of hygienic projects, such as waterworks sewage, garbage and trash disposal plants, drainage systems, and insect and rodent control projects. Plans development of watersheds. Oversees swamp drainage and insect spraying. Directs workers in sewage disposal plants. Inspects and regulates sanitary conditions of public places, such as markets, parks, and camps.

Urban Planner - (D.O.T. 199.167-014) - Develops comprehensive plans and programs for utilization of land and physical facilities of cities, counties, and metropolitan areas. Investigates complaints of violations in municipal or regional land use and zoning regulations.

Construction Engineer - (D.O.T. 005.061-014) - Plans and designs structures to specifications. Oversees erection of buildings, bridges, etc. Also see Construction Cluster.

Landscape Architect - (D.O.T. 001.061-018) - Plans and designs development of land areas for projects, such as parks and other recreational facilities, airports, highways, and parkways, hospitals, schools, land subdivisions, and commercial, industrial, and residential sites. Prepares site plans, working drawings, specifications, and cost estimates for land development, showing ground contours, vegetation, locations of structures, and such facilities as roads, walks, parking areas, fences, walls, and utilities, coordinating arrangement of existing and proposed land features and structures.

RESOURCE CONTROL

The environmentalist is concerned with conservation, not as a means of making money, but as a means of preserving our resources for beauty, recreation, and tourism as well as maintaining ecological balance. Most occupations in the resource control family are those which regulate land use and maintenance of the environment and enforce the laws governing the use of our resources.

Animal Ecologist (Zoologist) - (D.O.T. 041.061-090) - Studies effects of various environmental influences on distribution, physical characteristics, behavior and life history of animals. Studies lower case environmental factors such as plant growth, rainfall, temperature, altitude, and sunlight in relation to animal life.

Aquatic Biologist - (D.O.T. 041.061-022) - Studies plants and animals living in water and the environmental conditions affecting them. Investigates physical conditions to determine their relationship to aquatic life. Also see Marine Science Cluster.

Commissioner, Conservation of Resources - (D.O.T. 188.117-026) - Directs conservation of natural resources within the state. Initiates conservation programs. Establishes standards for resource depletion. Implements rehabilitation programs for workers affected by changing technology.

Ecologist - A term applied to persons who study plants or animals in relation to effect of environmental influences such as rainfall, temperature, altitude, and kind and quantity of food.

Engineer, Soils - (D.O.T. 024.161-010) - Oversees and participates in field and laboratory tests of soils to determine their properties. Inspects proposed construction sites to determine general type, classification, and characteristics of soils. Reviews and prepares reports of test results.

Federal Aid Coordinator - (D.O.T. 188.167-054) - Directs disbursement of federal funds and administration of federal projects to implement fish and wildlife conservation programs.

Fire Lookout - (D.O.T. 452.367-010) - Observes, locates, and reports forest fires and weather phenomena from remote fire lookout station. Serves as public contact at station and promotes fire prevention program.

Fire Patroller - (D.O.T. 372.667-034) - Patrols assigned area of forest to locate and report fires and hazardous conditions and to insure compliance with fire regulations by travelers and campers. May participate in search for lost travelers or campers.

Fire Warden - (D.O.T. 452.167-010) - Supervises and coordinates activities or workers engaged in forest fire prevention and control. Inspects forest, logging, and mill areas for fire hazards. Enforces state and federal fire regulations. Dispatches personnel and equipment to fires. May restrict public recreation use of forest area during fire season.

Forester - (D.O.T. 040.061-034) - Manages and develops forest lands and their resources for economic and recreational purposes. Plans campsites and recreational centers. Assists in projects for control of floods, soil erosion, tree diseases, and insect pests in forest.

High Climber - (D.O.T. 921.664-014) - Climbs trees, inspects top for defects, rot, splits, deadwood. Installs equipment for yarding. Also called topper, rigger.

Forester Aid - (D.O.T. 452.364-010) - Works to inventory, protect, and reforest timber lands by observing, measuring and recording forest data such as temperature, waterflow, burn and cut off areas. Participates in enforcement of recreation regulations such as parking, sanitation, campfires, etc.

Forest Ecologist - (D.O.T. 040.061-050) - Conducts research in environmental factors affecting forests. Studies conditions suited for best plant growth. Investigates adaptability to environmental conditions such as changes in soil type, climate, and altitude.

Forest Engineer - (D.O.T. 005.167-018) - Performs engineering duties concerned with removal of logs from timber area. Designs and oversees construction of campsites, loading docks, bridges, water and sewage system maintenance, etc.

Forest-Fire Fighter - (D.O.T. 452.687-014) - Suppresses forest fires by felling trees, digging trenches, using axe, etc. Patrols burned area after fire to watch for hot spots that may re-start fire. May cut brush, clear ground litter, and ignite back fire to hasten burnout of major fire within contained area and to prevent its spread across firelines.

Gamekeeper - (D.O.T. 169.171-010) - Breeds, raises and protects game animals and birds on state game farms or private game preserves. Traps noxious animals and birds that may prey upon or carry disease to charges. Liberates birds and animals in designated areas.

Park Naturalist - (D.O.T. 049.127-010) - Participates in park surveys of forest conditions and distribution, abundance, and habits of flora and fauna. Protects natural features of the park. Interviews specialists in desired fields to obtain and develop data for programs. May plan, organize, and direct activities of seasonal staff members.

Park Ranger - (D.O.T. 169.167-042) - Enforces laws, regulations, and policies in state and national parks. Enforces standards of cleanliness and sanitation, patrols to prevent fires, vandalism and theft.

Range Manager - (D.O.T. 040.061-046) - Conducts research in range problems to provide sustained production of forage, livestock, and wildlife. Determines grazing seasons. Plans and directs construction and maintenance of range improvements.

Game Management Agent - Enforces statutes and regulations enacted for the protection and conservation of wildlife. Acts as liaison between state and federal agencies. Confers and advises concerning local conditions affecting programs under his/her jurisdiction.

Wildlife Biologist - Works in the conservation and management of wildlife or in the determination, establishment, and application of the biological facts, principles, methods, techniques, and procedures necessary for the conservation and management of wildlife.

UNIT VIII

ENVIRONMENT

ACTIVITY SHEET 1—ADD-A-LETTER

Directions: The consonants have been left out of the occupations below. Use the occupations listed at the right as a guide for adding the correct letters.

1. __a__e__/__e__ __e__
2. e__ __e__ __i__a__o__
3. __a__e__ __/e__ __i__ee__
4. ai__/a__a__ __ __ __
5. __a__i__a__ia__
6. __o__e__ __e__
7. __a__ __/__a__u__a__i__ __
8. __i__ __o__i o__o__i__ __
9. __a__ __ __ __a__e/a__ __ __i__e__ __
10. e__o__o__i__ __
11. __e__a__e/__ __a__ __/o__e__a__o__
12. __ __a__ __/__ua__a__ __i__ __/i__ __ __e__ __o__
13. __a__ __/__a__ __e__
14. u__ __a__/__ __a__ __e__
15. __i__ __/__a__ __ __er
16. __oo__/a__ __/__ __u__/i__ __ __e__ __o__
17. __a__ __-__ __ou__ __/__a__e__a__e__
18. e__ __o__o__o__i__ __
19. I__ __u__ __ __ia__/__ __ __ie__i__ __
20. __o__e__ __/__i__e/__i__ __ __e__

Urban Planner
Plant Quarantine Inspector
Forester
Milk Sampler
Industrial Hygienist
Entomologist
Air Analyst
Sewage Plant Operator
Food and Drug Inspector
Park Naturalist
Safety Engineer
Park Ranger
Ecologist
Landscape Architect
Sanitarian
Camp-Ground Caretaker
Water Tender
Exterminator
Microbiologist
Forest Fire Fighter

UNIT VIII

ENVIRONMENT

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

Choose from the activities in supplementary section 4.

H. Exhibit productive work habits and attitudes.

The list of examples of occupations classified in the Environment cluster found in the Information Sheet may be used as a guide for resource people to contact to speak to your class, sources to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT VIII

ENVIRONMENT

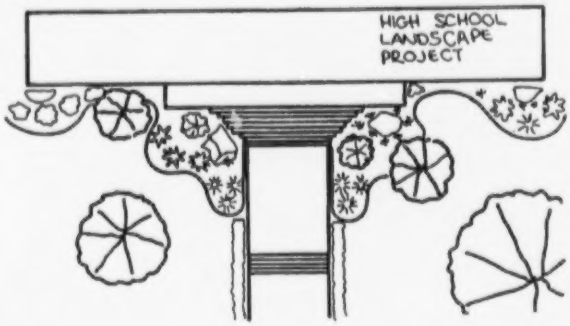
ACTIVITY SHEET 3 — ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. A BEAUTIFUL CITY BEGINS WITH ME! Have the students investigate pollution in your city. Have them list the sources, what could be done to alleviate the problems, and their plans for action. Then have the students initiate a city clean up day — involve the community!

B. The entomologist studies insects and their relation to plant and animal life. Have the students prepare a report on the effect of insects on our environment.

C. Have the students organize into city departments and design a model city, each department being responsible for the planning. Each group of students should meet with your city's comparable department for realistic information.

D. The landscape architect prepares site plans, marking drawings, specifications, etc., for facilities. Have the students design an improved landscape for your school. Students should label the plants on their sketches, and prepare a paper stating the estimated cost of the plants and special considerations such as drainage, sidewalks, lighting, etc., which influenced their decisions.



E. The disease prevention job family has occupations classified within it that analyze and control organisms that cause nutritional deficiency or disease. Have the students research diseases caused by improper exposure of food. Examples are: botulism, salmonella poisoning, etc.

F. Have the students interview an employee of an industry in your community who deals with establishing measures for eliminating and controlling occupational health hazards. The students should then report their findings to the class, using visual aids if possible.

UNIT VIII

ENVIRONMENT
UNIT TEST

A. Name five occupations classified in the Environment cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Environment cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

FINE ARTS AND HUMANITIES

BEST COPY AVAILABLE

UNIT IX

FINE ARTS AND HUMANITIES INFORMATION SHEET

I. What Is the Fine Arts and Humanities Cluster?

  A. It is a group of occupations involved in the advancement of the arts, religion, and culture.

  B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

  A. **Visual Arts**—occupations involved in producing art images

  B. **Writing**—occupations involved in artistic communication in written forms

  C. **Performing Arts**—occupations involved in producing music, theater, and dance

  D. **Religion and Theology**—occupations involved in providing religious services

  E. **Languages and Linguistics**—occupations involved in studying written and oral languages

  F. **History and Museums**—occupations involved in preserving and studying the records and materials of the past

III. Examples of Occupations

VISUAL ARTS

Lay-Out Artist - (D.O.T. 141.061-018) - Lays out the construction of the ad in a rough sketch, determining its elements of design, composition, and color, and selecting its illustrations and/or photographs. May work up a more finished design for the client's consideration. May design layouts for newspaper, magazine, television, poster, direct mail, and billboard advertisements.

Renderer - (D.O.T. 970.281-014) - Renders drawings for display or advertising purposes, working from sketches and blueprints. May be designated according to specialization. (Renderer is also employed by architects, industrial designers, etc.)

Letterer - (D.O.T. 970.661-014) - Paints or draws precise lettering using lettering pen or brush and determining lettering design from layout sketches and instructions. May design lettering if not specified.

Paste-Up Artist - (D.O.T. 979.381-018) - Photographs prepared copy, develops negatives, and arranges and mounts illustrations and print on paper according to lay-out artist's instructions. Cuts elements of the design of the ad and fits them into space specification. Draws remainder of design.

Illustrator - (D.O.T. 141.061-022) - Draws and paints illustrations for advertisements, books, magazines, posters, billboards, and catalogs.

Medical Illustrator - (D.O.T. 141.061-026) - Makes sketches and constructs three-dimensional models to illustrate surgical and medical research procedures, anatomical and pathological specimens, unusual clinical disorders, micro-organisms, and plant and animal tissues. Develops drawings, paintings, diagrams, and models illustrating medical findings for use in publications, exhibits, consultations, and research and teaching activities.

Cover Design Artist - (D.O.T. 141.081-018) - Designs and renders cover illustrations for publications, such as magazines, books, and phonograph record albums, based on ideas suggested by art department. Designs lettering for title copy. May be designated according to specialization such as book-jacket designer, phonograph album designer.

Colorist - (D.O.T. 022.161-014, 141.051-010, 970.381-010) - Works as a color expert and consultant for such diverse industries as textiles and plastics, greeting cards and maps, photography, motion pictures. Develops color formulas and plans and directs activities of color shop.

Art Director, Retail Trade - (D.O.T. 141.031-018) - Designs artwork, prepares layouts, and supervises and coordinates activities of workers engaged in illustrating and laying out advertisements for newspaper publication.

Clothes Designer - (D.O.T. 142.061-018) - Creates, designs, and prepares patterns for new types and styles of women's, men's, and children's wearing apparel or knitted garments. Roughly sketches outline of pattern on printed forms. Draws various parts of garment to full scale. Cuts out drawings with scissors to make pattern for experimental garment. Writes specifications for garment, describing construction, color scheme, and type of fabric to be used.

Embroidery Designer - Creates decorative designs to be embroidered on fabrics. Draws full-scale design on paper. Transfers by perforator to paper pattern by rubbing piece of red marking wax over perforations in design.

Furniture Designer - Designs furniture line or individual pieces for manufacture, according to design trends, offerings of competition, production costs, and characteristics of company's traditional market.

Handbag Designer - Originates and modifies designs for ladies' handbags and makes patterns and samples.

Hat Designer - Designs caps, hats, or millinery; copies or modifies existing designs, draws and cuts out master patterns, and makes sample articles.

Industrial Designer - Designs form of products to be manufactured and associated packaging and trademarks.

Fashion Artist - (D.O.T. 141.061-014) - Draws figures, garments, and accessories for newspaper advertisements, determining pose suitable to emphasize selling points of apparel, using pencil, charcoal, ink, or paints. Illustrates background and draws lettering for headlines.

Art Director - (D.O.T. 142.031-010) - Directs, coordinates, and participates in motion picture art work production concerned with design of sets, scenic effects, and costumes.

Cartoonist - (D.O.T. 141.081-010) - Draws cartoons in succession to show action necessary to portray and dramatize animation of characters. Labels each section with designated colors when colors are used. May create and prepare sketches and model drawings of characters.

Painter - (D.O.T. 144.061-010) - Creates works by the skilled application of paint to a surface or ground. The principal accepted mediums for the painter are oil, tempera, watercolor, gouache, pastel, polymer, encaustic, and fresco. May be designated according to subject or style, such as painter of fresco, miniatures, murals, portraits, landscapes, and realist, impressionist, pop and op, hard-edge. Scenic artist in motion pictures paints scenery, back drops, and other parts of motion picture sets.

Commercial Photographer - (D.O.T. 143.062-030) - Photographs persons, motion-picture sets, merchandise, exteriors and interiors, machinery, and fashions to be used in advertising and selling. Arranges equipment and setting. Develops film, enlarges, reduces, and intensifies prints. May take portraits. Apprentice learns while performing duties for photographer. Assists in taking pictures and in darkroom chores.

Portrait Photographer - (D.O.T. 143.062-030) - Photographs persons and makes photographic negatives from which prints can be developed, using studio-type camera. Arranges equipment and background, and poses subject. Develops prints in darkroom.

WRITING

Literary Writer or Author - (D.O.T. 131.067-046) - Creates original works of literature for publication as in books or magazine articles. May specialize in such areas as fiction or nonfiction. May write on assignment or submit unassigned articles for publication. May be designated according to type of writing done, such as novelist, short story writer, essayist.

Playwright - (D.O.T. 131.067-038) - Dramatist - Writes original plays such as tragedies, comedies, or dramas, or adapts themes from fictional, historical, or narrative sources, for dramatic presentation.

Poet - (D.O.T. 131.067-042) - Composes narrative, dramatic, or lyric poetry, usually on free-lance basis, for publication, choosing own subject matter and suitable form to express personal feeling and individual experience, or to narrate story or event. May write doggerel or other verse about specified themes for special assignments or for syndicated columns.

Technical Writer - (D.O.T. 131.267-026) - Writes in clear and concise language service manuals and related technical publications concerned with installation, operation, and maintenance of electronic, electrical, mechanical, and other equipment.

Copy Writer - (D.O.T. 132.067-014) - Puts on paper the first words of ad. Writes original copy for newspapers, magazines, billboards, and transportation advertising. Writes scripts for radio and television advertising. Consults with account executive and media and marketing representatives.

Humorist - (D.O.T. 131.067-027) - Writes humorous articles for publication, choosing own subject matter, or writing humor on particular subject for specific occasion. May specialize in writing comedy shows for radio and television presentation and be designated comedy writer.

Lexicographer - (D.O.T. 132.067-018) - Compiles dictionaries by determining origin, meaning, and pronunciation of words and writing their definitions for inclusion in dictionary.

Technical and Scientific Publications Manager - (D.O.T. 132.037-022) - Directs editorial and publishing policies of technical and scientific publications and supervises staff engaged in preparation, editing, and production. May coordinate activities of staff engaged in research programs and publish research findings and results.

PERFORMING ARTS

Choreographer - (D.O.T. 151.027-010) - Creates original dances for ballet performance, musical show, or revue to be performed on stage, on television, in motion pictures, or in nightclubs, and instructs performers.

Dancer - (D.O.T. 151.047-010) - Performs dances alone, with partner, or in groups, such as corps de ballet or chorus ensemble, to entertain audience. Performs classical, modern, or acrobatic dances, coordinating body movements and facial expressions with musical accompaniment to express theme of dance. Rehearses dance routines developed by choreographer. May perform original dances. May sing and provide other forms of entertainment. May specialize in particular style of dancing and be designated according to specialty such as acrobatic dancer, ballet dancer, ballroom dancer, chorus dancer, interpretative dancer, or tap dancer.

Stage Director - (D.O.T. 150.067-010) - Interprets play scripts for stage presentation, and instructs actors in interpretation of individual roles. Confers with producer about production plans and script, and assists in selection of cast. Explains production plans to cast and stage crew. Discusses script changes with playwright. Approves scenery design, sound and lighting effects, costumes, make-up, and choreography. Conducts rehearsals, instructing performers in interpretation of script until roles are mastered. Duties of stage director end when production is ready for indefinite run.

Stage Manager - (D.O.T. 962.167-014) - Takes over routine management of daily stage performances when duties of stage director are at an end. Until then, functions as assistant to stage director, and liaison to backstage personnel. Supervises activities of stage crew and coordinates production plans.

Theatre Manager - (D.O.T. 187.167-154) - Manages theatre for stage productions. Coordinates and supervises activities of personnel to ensure efficient operation and to promote patronage of theatre. Directs workers in making alterations to and repair of building. Manages financial business of theatre. Requisitions or purchases supplies.

Set Designer - (D.O.T. 142.061-050) - Designs sets for theatrical productions. Studies period of architecture and decoration which represents time of play. Sketches and paints plans. Presents plans to stage director and producer for approval. Builds miniature sets in cardboard, plaster, or sponge. Prepares working drawings showing elevation and plan of stage in detail for scene builders. May designate size and oversee building of furniture and setting according to miniature set. May create special stage lighting to achieve dramatic or decorative effects, or work with lighting director. In experimental theatres, plans stage sets for mobility, interchangeability, and economy in accord with budget limitations.

Costume Designer - (D.O.T. 142.061-018) - Designs costumes for theatre productions. Studies script and characters. Designs costumes according to style of period, economic and social status of characters portrayed and mobility of character. Confers with set designer to coordinate costumes and color with set design.

Dramatic Coach - (D.O.T. 150.027-010) - Coaches amateur or professional performers in drama techniques. Instructs and drills performer in camera or stage techniques, script analysis, characterization, vocal techniques, and interpretation of role in dramatic productions. Advises performer regarding basic wardrobe, grooming, and manner to prepare him for professional contacts. Teaches correct methods and techniques in preparing for impromptu readings and in auditioning for specific parts in plays. May be known according to field of specialization such as screen coach or theatre coach.

Actor - (D.O.T. 150.047-010) - Portrays role in dramatic production to interpret character or present characterization to audience. Rehearses part, learning lines and cues as directed. Interprets comic or serious parts by speech and gesture. May sing and dance. May specialize in portraying particular type of part and be designated character actor, juvenile actress, character actress.

Dramatic Reader - (D.O.T. 150.047-010) - Entertains audiences by reading and interpreting roles to portray different characters and adapts writings, such as plays, letters, articles, or stories, into one cohesive presentation. Plans staging and approves costumes. Memorizes script and interprets all roles, relying mainly on changes of voice and inflection to hold audience's attention. Acts with minimum number of stage properties, using book or script for effect. Performs alone or with one or more dramatic readers.

Story Teller - (D.O.T. 150.047-010) - Reads or retells stories selected for storytelling programs in libraries, schools, playgrounds, and story hours on radio and television, to introduce children to literature.

Property Coordinator - (D.O.T. 962.167-018) - Provides stage properties for theatrical production. Purchases or rents properties from merchants and museums or obtains them from theatre or warehouse. Arranges with Prop Maker for construction of period furniture and properties. Arranges properties on stage for each scene. Clears or directs clearing of properties from stage at conclusion of each scene. When accompanying show on tour, packs and unpacks properties. May arrange transportation of properties.

Flyer - (D.O.T. 962.687-018) - Lowers or raises scenery and curtains by pulling ropes from position above or to one side of stage. May also move scenery on stage. Follows cue sheet or bell or light signals to make required changes during performance.

Stage Electrician - (D.O.T. 962.362-014) - Installs electrical equipment and lights used on stage, and operates switchboard to supply stage with electrical and lighting effects, following cue sheet.

Composer - (D.O.T. 152.067-014) - Creates and writes musical compositions. Invents melodic, harmonic, and rhythmic structures to express ideas musically within circumscribed musical form, such as symphony, sonata, or opera. Translates melodies, harmonies, and rhythms into musical notes on scored music paper. Arranger transcribes musical compositions or melodic lines to adapt them to or to create particular style for orchestra, band, choral groups, or individual. Orchestrator writes score for orchestra, band, choral group, or individual, changing music from one medium to another, or one voice to another.

Conductor - (D.O.T. 152.047-014) - Conducts instrumental music groups, such as orchestras and dance bands. Auditions and selects members of group. Selects music to accommodate talents and abilities of group and to suit type of performance to be given. Directs group at rehearsals and performances. May transcribe musical compositions and melodic lines to adapt them for group. May schedule tours and performances and arrange for transportation and lodging. May be designated according to specialization, such as symphonic orchestra leader, jazz orchestra leader, music director.

Director, Music - (D.O.T. 152.047-018) - Selects and arranges program of music to meet time and content requirements for specified broadcast. Contacts recording companies and music publishers, and verified copyright clearance for music used on broadcasts. Also see Communications and Media cluster.

Choral Director - (D.O.T. 152.047-010) - Conducts vocal music groups, such as choirs and glee clubs. Auditions and selects members of group. Selects music to accommodate abilities of group. Directs choir at rehearsals and performances. May schedule tours and performances and arrange for transportation and lodging. May conduct group with orchestral accompaniment. Also see Religion and Theology family.

Instrumentalist - (D.O.T. 152.041-010) - Plays one or more musical instruments in recital, in accompaniment, or as member of orchestra, band, or other musical group. Studies and rehearses score. May improvise or transpose music. May compose or arrange music. May be designated according to instrument played as bell ringer, drummer, harpist, organist, pianist, violinist. May play accompaniment to singer or to other instrumentalist and be designated accompanist.

Vocalist - (D.O.T. 152.047-022) - Sings classical, opera, church, folk, or pop music in musical programs. Studies and rehearses words and music for performance as soloist or member of vocal ensemble. Sings art music, such as lieder, arias, or cantatas, combining musical training, expression, and quality of voice with histrionic ability. Under direction of conductor. May be known according to voice range, such as soprano, contralto, tenor, bass, or baritone. May be designated according to singing specialty such as opera singer, recitalist, vocal soloist, blues singer, folk singer, gospel singer.

Piano Technician - (D.O.T. 730.281-038) - Repairs, refinishes, and tunes pianos, using specialized tools. As furniture finisher, may repair, replace, resurface, and refinish wooden parts.

Piano Tuner - (D.O.T. 730.361-010) - Tunes pianos in public and private establishments, using tuning fork and tuning hammer. May repair and refinish pianos as piano technician.

Piano-Action Regulator - (D.O.T. 730.681-010) - Regulates piano actions, using handtools. Aligns and adjusts a variety of action parts to operate as required individually and in relation to other parts. Depresses piano keys to verify operation of action.

RELIGION AND THEOLOGY

Clergyperson - (D.O.T. 120.007-010) - Conducts religious worship and performs other spiritual functions associated with beliefs and practice of religious faith or denomination, and provides spiritual and moral guidance and assistance to members. Leads congregation in worship services. Prepares and delivers sermons and other talks. Interprets doctrine of religion. Instructs people who are to become members of the faith. Conducts weddings and funerals. Administers rites of baptism, confirmation, and other sacraments or ordinances. Visits sick and shut-ins, and helps poor. Counsels those in spiritual need and comforts bereaved. Oversees religious education program. May write articles for publication and engage in inter-faith, community, civic, and educational activities sponsored by or related to interest of denomination. May teach in seminaries and universities. May serve in armed forces, institutions, or industry as a chaplain. May travel from area to area as an evangelist, to preach at special services to awaken religious interest. May become an administrator and policy and decision maker in denominational headquarters.

Protestant Clergyperson - (D.O.T. 120.007-series) - In large churches, may have greater administrative or denominational responsibilities, and share responsibilities of the ministry with associates or assistants. May be titled bishop, pastor, reverend, vicar, minister.

Roman Catholic Priest - (D.O.T. 120.007-series) - Hears confessions and administers the sacraments. Usually divided into two main groupings. Diocesan or secular priest works in a parish and is concerned with the parish churches and diocesan schools. Religious priest belongs to a religious order such as Jesuits or Dominicans, and works as a member of a community in a specialized task such as teaching or missionary work.

Rabbi - (D.O.T. 120.007-series) - May be affiliated with one of three branches of American Judaism: Orthodox, Conservative, or Reform.

Missionary - (D.O.T. 120.007-series) - Carries religious message to lands and peoples not of own faith to win converts and establish native church where there is no self-supporting local organization. May also provide educational, medical, nursing, and social service.

Director of Religious Education - (D.O.T. 129.107-002) - Plans, organizes, and directs church or synagogue school. Develops study courses and supervises instructional staff. Counsels students. Promotes student participation in extracurricular church activities. Visits homes of church members and confers with clergymen, denominational officials and organizations to solicit support and participation and to stimulate interest in educational programs. Participates in such denominational activities as giving help to new congregations and small churches, fellowships, and synagogues. Interprets work of school to public through speaking or discussion-leading, and contributes articles to local and national publications. Responsible for school supplies.

Minister of Sacred Music - (D.O.T. 152.047-010) - Selects and arranges program of music to meet time and content requirements of religious services. Consults with clergyperson to determine type of music needed, and integrates it within program. In small organization, may serve as Choir Director, in recruiting, training, and directing choir or choral singing. Works with organist and instrumentalists, in coordinating and performing musical program. Responsible for ordering musical supplies. Establishes musical groups to represent organization at civic and community events.

LANGUAGE AND LINGUISTICS

Linguist - (D.O.T. 059.067-014) - A person who is skilled in foreign languages, particularly living languages. Employment opportunities would be found in such fields as foreign trade, consular work, government service, social work, science, cultural centers, library science, research, teaching, travel agencies, and international transportation organizations.

Interpreter - (D.O.T. 137.267-010) - Translates spoken passages of a foreign language into a specified language. May be designated according to languages interpreted.

Translator - (D.O.T. 137.267-018) - Translates documents from one language to another language. When working as a foreign correspondent, reads, translates, and answers mail written in a foreign language. May serve as a foreign news translator or voice interceptor in translating radio messages, news, and script into English. Translates similar material from English into a foreign language for broadcast to a foreign country. May also translate technical foreign-language radio-communications service telegrams (pertaining to company operations) received from station in foreign countries, as well as translating English messages into a foreign language for transmission. Sometimes translates scientific or technical documents into foreign languages, usually specializing in a particular science, such as engineering, physics, or medicine. Foreign-exchange code clerk codes and decodes cables relating to foreign-language messages to facilitate foreign commerce through domestic banks. May code and transmit outgoing messages by teletype.

Etymologist - (D.O.T. 059.067-010) - Performs research relative to origin, history, and development of words. Traces derivation of words by analysis of component parts, pointing out probable roots and tracing their meaning from their origin in the parent language to present usage.

Philologist - (D.O.T. 059.067-010) - Studies structure and development of language. Traces origin and evolution of words and syntax through comparative analysis of ancient parent languages and modern language groups, studying word and structural characteristics such as morphology, semantics, phonology, accent, and grammar. Identifies and classifies obscure languages, according to family and origin. Reconstructs and deciphers ancient languages.

HISTORY AND MUSEUMS

Biographer - (D.O.T. 052.067-010) - Specializes in reconstruction in narrative form of career or phase in life of an individual. Assembles biographical material from sources such as news accounts, diaries, personal papers and correspondence, written accounts of events in which the subject participated, and consultations with associates and relatives. Portrays character and may interpret behavior of subject on basis of his/her historical environment and the application of psychological analysis, relating his/her activities to pertinent events during his lifetime.

Genealogist - (D.O.T. 052.067-018) - Conducts research into genealogical background of an individual or family in order to establish descent from a specific ancestor or to discover and identify forebears. Constructs charts of family relationships and prepares history of family in narrative form or brief sketches.

Archivist - (D.O.T. 101.167-010) - Specializes in identifying, preserving, and making available documentary materials of historical value, and participates in research activities based on archival materials. Appraises documents, such as government records, minutes of corporate board meetings, letters from famous persons, and charters of non-profit foundations. Prepares or directs preparation of reference aids for use of archives, such as accession lists, indexes, guides, bibliographies, abstracts, and microfilmed copies of documents. Advises government agencies, scholars, journalists, and others conducting research by supplying available materials and information, according to familiarity with archives and with political, economic, military, and social history of period. Requests or recommends pertinent materials available in libraries, private hands, or other archives. Selects and edits documents for publication and display, literary or journalistic expression, and techniques for presentation and display. May be designated according to subject matter specialty such as economic history, military history, political history, or according to nature of employing institution. In smaller organizations, may direct activities of libraries.

Curator - (D.O.T. 102.017-010) - Administers affairs of museum and conducts scientific research programs. Directs activities concerned with instruction, research, and public services. Interprets and assists in formulating policies. Supervises curatorial, preparatory and clerical staff. Administers exchange of loan collections. Obtains, develops, and organizes new collections. Organizes and conducts field parties engaged in scientific research, and performing duties, such as gathering scientific papers, selecting personnel, and securing financial support. Conducts research on new acquisitions. Investigates new methods and techniques used to prepare and present specimens, models, diagrams, and other visual aids for exhibit. Such collections would include: art galleries, herbariums, horticultural museums, medical museums, oceanariums, natural history museums, planetariums, zoological gardens, historical museums, wax museums, and industrial museums.

Historic Sites Supervisor - (D.O.T. 102.117-010) - Directs and coordinates activities of personnel engaged in investigating, acquiring, marking, improving, and preserving historic sites and natural reserves in conformity with state policy. Authorizes acquisition and improvement of sites within budget. Provides information and encouragement to individuals and groups attempting to acquire and maintain landmarks not considered feasible for state acquisition. Directs workers engaged in preparation of information brochures, exhibits, maps, and photographs. Serves as custodian of historic documents acquired during research efforts.

Armorer Technician - (D.O.T. 109.281-010) - Specializes in restoring and preparing exhibits of medieval arms and armor, designs and directs workers engaged in fabricating missing or broken parts. Conducts research to determine authenticity and classifies and catalogs articles.

Research Assistant and Encyclopedic Research Worker - (D.O.T. 102.267-014) - Conducts research on historical monuments, buildings, and scenes, in order to reconstruct them to scale in dioramas for use by fine arts students and for other university purposes. Collects information from libraries, museums, and art institutes.

Art Appraiser - (D.O.T. 102.167-010) - Examines works of art such as paintings, sculpture, and prints to determine their authenticity and value. Examines work for color values, style of brush-strokes, esthetic correctness, and other characteristics, to establish art period or identify artist. May illuminate work with quartz light to determine whether discoloration is present. May X-ray painting and apply chemical tests to detect forgery or to authenticate work.

UNIT IX

FINE ARTS AND HUMANITIES
ACTIVITY SHEET 1—ALPHABETIZING FINE ARTS AND HUMANITIES OCCUPATIONS

Directions: Place these occupations in alphabetical order.

illustrator
painter
dancer
lexicographer
composer
playwright
vocalist
clothes designer
clergyperson
interpreter
etymologist
curator
actor
story teller
poet
set designer
artist
choreographer

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________
9. ______________________________
10. ______________________________
11. ______________________________
12. ______________________________
13. ______________________________
14. ______________________________
15. ______________________________
16. ______________________________
17. ______________________________
18. ______________________________

commercial photographer 19.______________________________

instrumentalist 20.______________________________

conductor 21.______________________________

cartoonist 22.______________________________

art appraiser 23.______________________________

paste-up artist 24.______________________________

director of religious education 25.______________________________

UNIT IX

FINE ARTS AND HUMANITIES

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Fine Arts and Humanities cluster found in the Information Sheet may be used as a guide for resource people to contact to speak to your class, work sites to use for field trips, and films, and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT IX

FINE ARTS AND HUMANITIES

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. The visual arts job family has occupations classified within it that produce art images. Have the students choose from the following work tasks of occupations in this job family:

1. The letterer paints or draws precise lettering using a lettering pen or brush. Have the students prepare signs for your room. Examples are: CAREER RESOURCE AREA, CAREER MAGAZINES, SUPPLIES, ETC.
2. The cover design artist designs and renders cover illustrations for publications. Have the students design a cover for a magazine, a book, or a phonograph record album.
3. The clothes designer creates, designs, and prepares patterns for new types and styles of clothing. Have the students design an article of clothing and sketch it on paper.
4. The cartoonist draws cartoons, delineating in successive drawings action necessary to portray animation of characters. Have the students create and sketch their own cartoon.
5. The commercial photographer photographs virtually anything the consumer wishes to purchase. Have the students prepare an exhibit of photographs they have taken.

B. The writing job family has occupations classified within it that are involved in artistic communications in written forms. Have the students choose from the activities below:

1. Have the students research the playwright occupation; then write an original play.
2. Have the students research the different forms of poetry. Have the students compose a poem in one of the forms, naming the style.
3. The humorist, e.g., Erma Bombeck, writes humorous articles for publication. Have the students write an article. Students may either choose their own topic or may be given a particular subject.

C. The performing arts job family has within it occupations involved in producing music, theater, and dance.

1. Have the students perform a dance alone, with partners, or in groups for class.
2. Use one of the plays developed by a student and have the class put on a play for your school. Assign students work tasks similar to those classified in the performing arts family.
3. Have the students who possess musical talent play an instrument or sing before the class.

RAP MAN
BROOKLYN BREAKERS

D. The religion and theology job family is involved in providing religious services.

1. Have the students report on the different religious affiliations—their beliefs, days of worship, etc.
2. Have the students develop a study course for Bible study—much like the director of regligious education would do.

E. **The languages and linguistics job family has occupations involved in studying written and oral languages.**

1. Have the students who speak a foreign language teach the rest of the class their interpretation of the following common words: student, school, dance, athletics, radio, boy, girl, eat, teacher, car, money, time, pen/pencil, paper, rest room, etc.

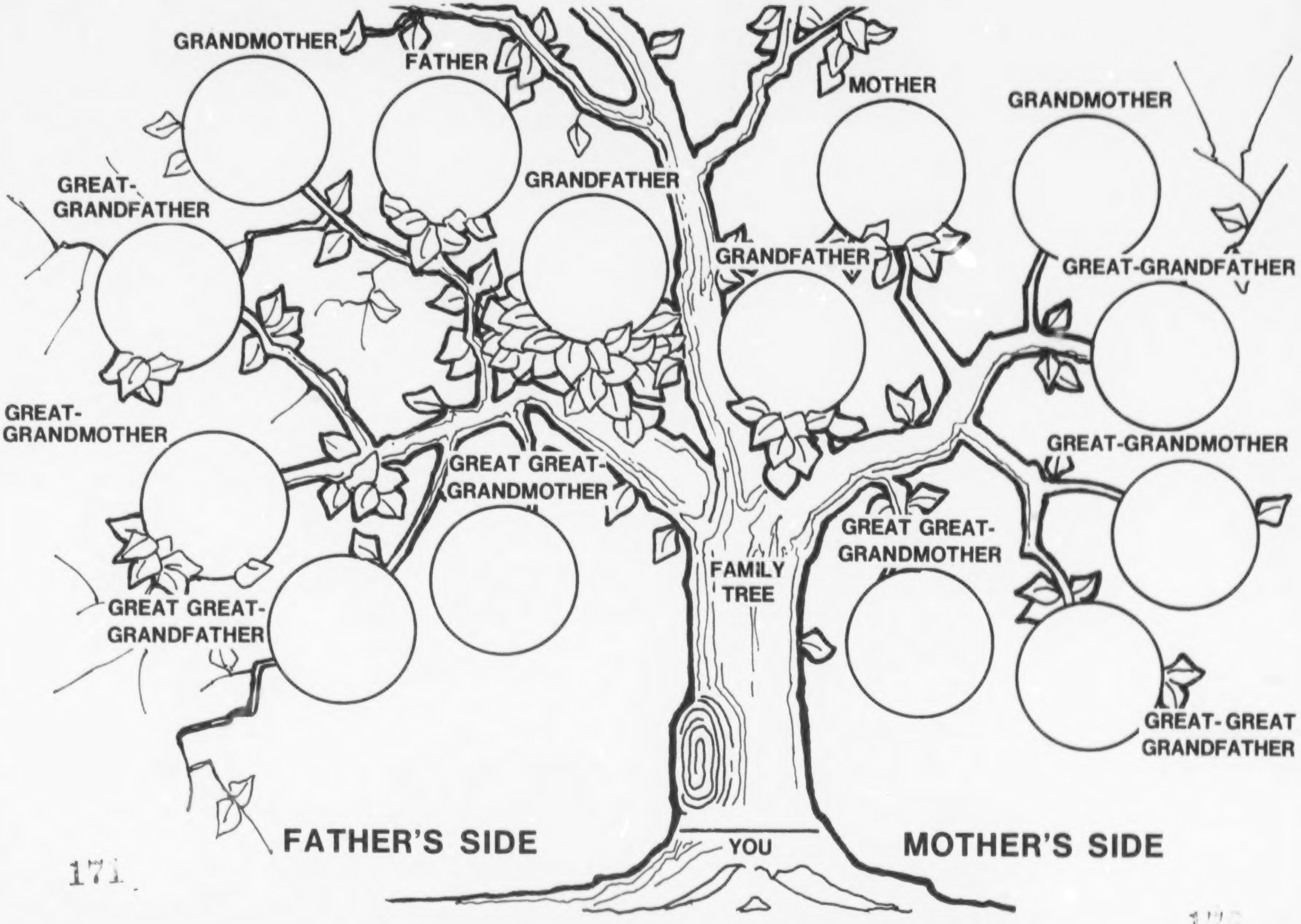
2. Using dictionaries, have students research the words mentioned below as to their origin, history, and development:

   a. student
   b. school
   c. dance
   d. athletics
   e. radio
   f. boy
   g. girl
   h. eat
   i. teacher
   j. car
   k. money
   l. time
   m. pen/pencil
   n. paper
   o. rest room

F. **The history and museums job family has occupations involved in preserving and studying the records and materials of the past.**

1. The genealogist conducts research into the background of an individual or family in order to establish descent from specific ancestors or to discover and identify forebears. Have the students complete the family tree on the following page.

2. The archivist specializes in identifying, preserving, and making available materials of **historical value**. Have the students bring materials to class (with approval from their parents) that fit this description and have a Show-and-Tell.


GRANDMOTHER
FATHER
GRANDFATHER
GREAT-
GRANDFATHER
GREAT-
GRANDMOTHER
GREAT GREAT-
GRANDMOTHER
GREAT GREAT-
GRANDFATHER
FAMILY
TREE
YOU
FATHER'S SIDE
MOTHER
GRANDMOTHER
GRANDFATHER
GREAT-GRANDFATHER
GREAT-GRANDMOTHER
GREAT GREAT-
GRANDMOTHER
GREAT-GREAT
GRANDFATHER
MOTHER'S SIDE

UNIT IX

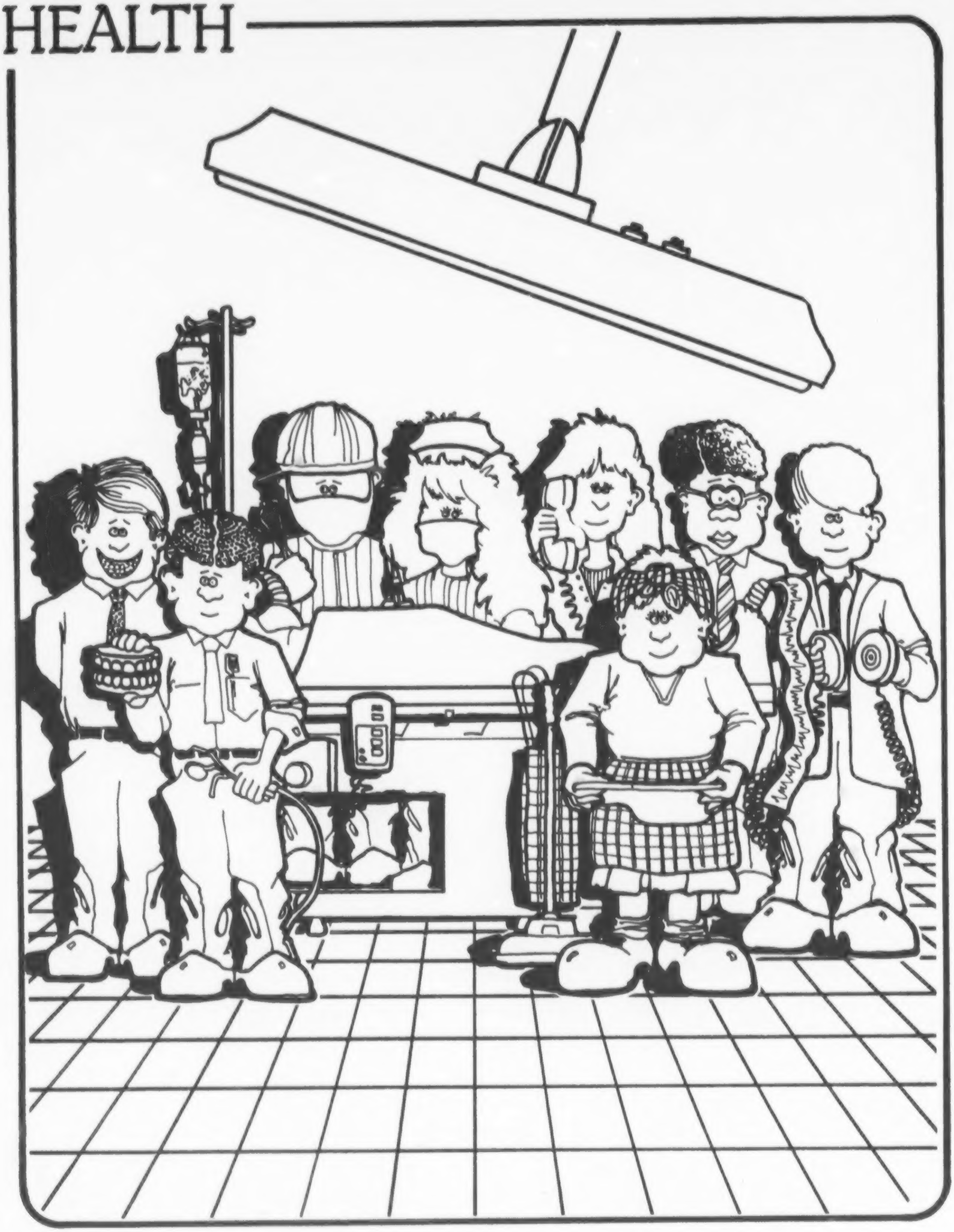
FINE ARTS AND HUMANITIES
UNIT TEST

A. Name five occupations classified in the Fine Arts and Humanities cluster.

1.
2.
3.
4.
5.

B. Discuss an occupation found in the Fine Arts and Humanities cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

HEALTH



UNIT X

HEALTH
INFORMATION SHEET

I. What Is the Health Cluster?

   A. It is a group of occupations involved in providing services and facilities to maintain the health of people.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Mental Health and Mental Health Services**—occupations involved in assisting persons with problems and emotional mental health disturbances before they become serious

   B. **Medical and Biological Science Services**—occupations involved in finding and analyzing basic medical data

   C. **Dentistry and Dental Science Services**—occupations involved in caring for teeth and gums

   D. **General Hospital and Medical Office- Related Occupations**—occupations involved in supporting the basic medical services through record keeping and supply

   E. **Medical Emergency Services**—occupations involved in responding to immediate medical needs

   F. **Administration of Health Services**—occupations involved in managing and directing all aspects of health services

   G. **Personal, Community, and Industry Health Services**—occupations involved in meeting the health care needs of persons in homes, schools, an industries

   H. **Pharmaceutical Science and Services**—occupations involved in providing drugs and health supplies

   I. **Professional Medical Supportive Personnel**—occupations involved in providing patient care and treatment under the direction of medical professionals

J. **Medical Professions**—occupations involved in giving highly-skilled medical care

III. Examples of Occupations

MENTAL HEALTH AND MENTAL HEALTH SERVICES

Counselor - (D.O.T. 045.107-010) - Counsels individuals and provides group educational and vocational guidance services. Collects, organizes, and analyzes information about individuals through records, tests, interviews, and professional sources, to appraise their interests, aptitudes, abilities, and personality characteristics for vocational and educational planning.

Psychologist - (D.O.T. 045.107-022) - Diagnoses or evaluates mental and emotional disorders of individuals, and administers programs of treatment. Interviews patients in clinics, hospitals, prisons, and other institutions, and studies medical and social case histories. Observes patients in play or other situations, and selects, administers, and interprets intelligence, achievement, interest, personality, and other psychological tests to diagnose disorders and formulate plans of treatment.

Psychologist, (Educational) - (D.O.T. 045.107-034) - Evaluates needs of average, gifted, handicapped, and disturbed children within educational system or school, and plans and carries out programs to enable children to attain maximum achievement and adjustment. Conducts diagnostic studies to identify child's needs, limitations, and potentials, observing child in classroom and at play, studying school records, consulting with parents and school personnel, and administering and interpreting diagnostic findings.

Psychiatrist - (D.O.T. 070.107-014) - Studies, diagnoses, and treats mental, emotional, and behavioral disorders. Organizes data concerning patient's family, personal (medical and mental) history, and onset of symptoms obtained from patient, relatives, and other sources, such as nurse, general duty and social worker, psychiatric. Examines patient to determine general physical condition, following standard medical procedures. Orders laboratory and other special diagnostic tests and evaluates data obtained. Determines nature and extent of mental disorder, and formulates treatment program. Treats or directs treatment of patient, utilizing therapy and variety of psychotherapeutic methods and medications.

MEDICAL AND BIOLOGICAL SCIENCE SERVICES

Chemistry Technologist - (D.O.T. 078.261-010) - Performs chemical analyses of body fluids and exudates, following manual instructions, to provide information used in diagnosing and treating diseases. Tests body specimens, such as urine, blood, spinal fluid, and gastric juices, for presence and quantity of metabolic substances and byproducts, such as sugar, albumin, and acetone bodies; and for various chemicals, drugs, and poisons, Prepares solutions used in chemical analysis. Calibrates and maintains spectrophotometers, color meters, flame photometers, and other equipment used in quantitative and qualitative analysis.

Microbiology Technologist - (D.O.T. 078.261-014) - Cultivates, isolates, and assists in identifying bacteria and other micro-organisms, and performs various bacteriological, mycological, virological, and parasitological tests. Receives human or animal body materials from autopsy or diagnostic cases, or collects specimens directly from patients, under supervision of laboratory director. Examines materials for evidence of disease or parasites. Makes parasitological tests of specimens concentrated or inoculated on culture media.

Electrocardiograph Technician - (D.O.T. 078.362-018) - Records electromotive variations in action of heart muscle, using electrocardiograph machine, to provide data for diagnosis of heart ailments. Attaches electrodes to specified areas of patient's body. Turns selector switch, and moves chest electrode to successive positions across chest to record electromotive variations occurring in various areas of heart muscle. Presses button to mark tracing paper to indicate positions of chest electrodes. Replenishes supply of paper and ink in machine and reports malfunctions. Edits and mounts final results and forwards results to cardiologist (medical ser.) for analysis and interpretation.

Radiologic Technologist - (D.O.T. 078.362-026) - Applies roentgen rays and radioactive substances to patients for diagnostic and therapeutic purposes. Positions patient under X-ray machine, adjusts immobilization devices, and affixes lead plates to protect unaffected areas. Administers drugs or chemical mixtures to render organs opaque. Adjusts switches regulating length and intensity of exposure. Assists in treating diseased or affected areas of body, under supervision of physician, by exposing area to specified concentrations of X-rays for prescribed periods of time. Prepares reports and maintains records of services rendered. Makes minor adjustments to equipment. May assist in therapy requiring application of radium or radioactive isotopes. May specialize in taking X-rays of specific areas of body.

Ultrasound Technologist - (D.O.T. 078.364-010) - Operates ultrasound diagnostic equipment to produce two-dimensional ultrasonic pattern and positive pictures of internal organs, for use by professional personnel in diagnosis of disease, study of malfunction of organs, and prenatal examination of fetus and placenta. Selects equipment for use in ultrasound setup according to specifications of examination. Explains process to patient, and instructs and assists patient in assuming physical position for required exposure to ultrasonic waves. Adjusts equipment controls according to specific orders and part of body to be examined. Moves transducer by hand or by manipulation of remote control device and observes sound wave display screen to note ultrasonic pattern produced. Activates equipment which automatically produces visual image of internal organs from ultrasonic pattern, or which produces continuing recorder strip printout of ultrasonic pattern. Photographs visual image of organs shown on display module, or removes recorder strip printout from machine when specified time for recording has elapsed, to obtain permanent record of internal examination. Attaches identification tag to photographs or recorder printouts to insure maintenance of records. Discusses test results with department supervisor or professional personnel to determine whether additional ultrasound examination is required, and repeats process as needed to secure desired results.

Medical Technologist - (D.O.T. 078.361-014) - Performs chemical, microscopic, serologic, hematologic, immunohematologic, parasitic, and bacteriologic tests to provide data for use in treatment and diagnosis of disease. Receives specimens for laboratory, or obtains such body materials as urine, blood, pus, and tissue directly from patient, and makes quantitative and qualitative chemical analyses. Cultivates, isolates, and identifies pathogenic bacteria, parasites, and other micro-organisms. Cuts, stains, and mounts tissue sections for study by pathologist. Performs blood tests for transfusions, studies morphology of blood. Groups or types blood and cross-matches that of donor and recipient to ascertain compatibility. Engages in medical research to further control and cure disease.

Pathologist - (D.O.T. 070.061-010) - Studies nature, cause, and development of diseases, and structural and functional changes caused by them. Diagnoses, from body tissue, fluids, secretions, and other specimens, presence and stage of disease, utilizing laboratory procedures. Acts as consultant to other medical practitioners. Performs autopsies to determine nature and extent of disease, cause of death, and effects of treatment. May direct activities of pathology department in medical school, hospital, clinic, medical examiner's office, or research institute. May be designated according to speciality as clinical pathologist, forensic pathologist, neuropathologist, surgical pathologist.

Nuclear Medical Technologist - (D.O.T. 078.361-018) - Prepares, administers, and measures radioactive isotopes in therapeutic, diagnostic, and tracer studies, utilizing variety of radioisotope equipment. Prepares stock solutions of radioactive materials, and calculates doses to a be administered by radiologist. Measures glandular activity, traces radioactive doses, and calculates amount of radiation, using equipment, such as Geiger counters, electroscopes, scalers, scintillation and positron scanners, and scintigrams. Calibrates equipment. Subjects patients to radiation as prescribed by radiologist, using such equipment as radium emanation tubes and needles, X-ray machines, and similar instruments. Executes blood volume, red cell survival, and fat absorption studies, following standard laboratory techniques.

DENTISTRY AND DENTAL SCIENCE SERVICES

Dental Hygienist - (D.O.T. 078.361-010) - Performs dental prophylaxis. Removes calcareous deposits, accretions, and stains from teeth by scaling accumulation of tartar from teeth and beneath margins of gums, using rotating brush, rubber cup, and cleaning compound. Applies medicaments to aid in arresting dental decay. Charts conditions of decay and disease for diagnosis and treatment by dentist. May expose and develop X-ray film. May make impressions for study casts. May remove sutures and dressings. May administer local anesthetic agents. May place and remove rubber dams, matrices, and temporary restorations. May place, carve, and finish amalgam restorations. May remove excess cement from coronal surfaces of teeth. May specialize in providing clinical services and health education in program designed to improve and maintain oral health of school children, in compliance with school policies and under direction of dentist and school administrator and be designated dental hygienist, public school. May specialize in lecturing community organizations and other interested groups on oral hygiene, using motion pictures, charts, and other visual aids, to augment service of public-health dentist and be designated dental hygienist, community health.

Dentist - (D.O.T. 072.101-010) - Diagnoses and treats diseases, injuries, and malformations of teeth and gums, and related oral structures. Examines patient to determine nature of condition, utilizing X-rays, mouth mirrors, explorers, and other diagnostic procedures and instruments. Cleans, fills, extracts, and replaces teeth, using rotary and hand instruments, dental appliances, medications, and surgical implements.

Endodontist - (D.O.T. 072.101-014) - Examines, diagnoses, and treats diseases of nerve, pulp, and other dental tissues affecting vitality of teeth. Examines teeth, gums, and related tissues to determine condition, using specific dental instruments, X-ray, and other diagnostic equipment. Diagnoses condition and plans treatment. Treats slight exposure of pulp by capping pulp chamber. Performs partial or total removal of pulp, using surgical instruments. Treats infected root canal and related tissues, and fills canal with specified material. Removes pathologic tissue, if indicated by surgery.

Treats and reinserts or realigns teeth that have been lost or displaced. Bleaches discolored teeth to restore natural appearance.

Oral Surgeon - (D.O.T.. 072,101-018) - Performs surgery on mouth and jaws. Executes difficult and multiple extraction of teeth. Removes tumors and other abnormal growths. Prepares mouth for insertion of dental prostheses by alveoloplasty and revision of oral soft tissues. Corrects abnormal jaw relations. Sets fractures of jaws. May treat patients in hospital.

Orthodontist - (D.O.T. 072.101-022) - Prevents, diagnoses, and corrects deviations from normal that occur in growth, development, and position of teeth and other dental-facial structures. Utilizes cephalometric and wrist radiograms, height and weight records, and front and lateral dental photograph in planning treatment. Designs intra- and extra-oral appliances to alter position and relationship of teeth and jaws to produce and maintain normal function. Fabricates appliances, such as space maintainers and retainers, bite planes, labial and lingual arch wires, and head caps.

Pedodontist - (D.O.T. 072.101-026) - Treats children's teeth. Fabricates space maintainers designed particularly for children. Treats primary and immature teeth and constructs and places bridges, dentures, and obturating appliances suitable for growing arches.

GENERAL HOSPITAL AND MEDICAL OFFICE RELATED OCCUPATIONS

Supervisor, Central Supply - (D.O.T. 079.164-010) - Directs activities of personnel in hospital supply room to furnish sterile and nonsterile supplies and equipment for use in care and treatment of patients. Supervises workers engaged in cleaning, assembling, and packing of linens, gowns, dressings, gloves, treatment trays, instruments, and related items; preparation of solutions; arrangement of stock; and requisitioning, issuing, controlling, and charging of supplies and equipment. Instructs personnel in use of sterilizing equipment and water distillation apparatus, setting up standardized treatment trays, and maintaining equipment of central supply room. Establishes standards of work performance and methods of operation for department. Ensures that aseptic techniques are employed by personnel in preparing and handling sterile items.

Diet Clerk - (D.O.T. 245.587-010) - Compiles dietary information for use by kitchen personnel in preparation of foods for hospital patients. Examines diet orders received from the wards and tallies portions and foods of each type diet, such as general diet, gastric diet, and light diet. Marks the amounts of tally on the master menu to inform kitchen personnel of food requirements. Processes new diets and changes as required and keeps records of patients' rooms to insure delivery of food at meal time.

Receptionist, Doctor's Office or Hospital - (D.O.T. 237.367-038) - Interviews incoming patients or representatives, records information required for admission, etc. Interviews the patient or representative to obtain and record name, address, age, religion, persons to notify in case of emergency, and individual or insurance company responsible for payment of bill. Explains hospital regulations such as visiting hours, payment of accounts, and schedules of charges. Assigns the patient to the room or ward and escorts the patient or arranges for escort to the assigned room. May assume duties related to file clerk.

MEDICAL EMERGENCY SERVICES

Emergency Medical Services Coordinator - (D.O.T. 079.117-010) - Directs medical emergency service program. Coordinates activities of persons involved in rescue, transportation, and care of accident or catastrophe victims, and others requiring emergency medical assistance. Arranges for establishment of emergency medical facilities, staffing of facilities by emergency-trained medical and auxiliary personnel, installation of telecommunication network components, and acquisition of emergency vehicles. Maintains records of facilities and personnel, and periodically inspects facilities to insure capability of meeting area's emergency needs. Maintains telecommunication contact with mobile and stationary units comprising emergency service network to coordinate activities of personnel, enlist services of other protective agencies, or provide alternate directions to on scene emergency personnel when planned procedures are not feasible. Develops, plans, and participates in training programs for ambulance and rescue personnel. Cooperates with schools and community organizations to encourage public interest in and knowledge of basic and advanced first aid training, and assists groups in development and presentation of classes. Maintains records of emergency medical service activities, for coordination with records prepared by cooperating institutions, to provide data for evaluation of program.

Emergency Medical Technician - (D.O.T. 079.374-010) - Administers first-aid treatment to and transports sick or injured persons to medical facility, working as member of emergency medical team. Responds to instructions from emergency medical dispatcher and drives specially-equipped emergency vehicle to specified location. Monitors communication equipment to maintain contact with dispatcher. Removes or assists in removal of victims from scene of accident or catastrophe. Determines nature and extent of illness or injury, or magnitude of catastrophe, to establish first-aid procedures to be followed or need for additional assistance, basing decisions on statements of persons involved, examination of victim or victims, and knowledge of emergency medical practice. Administers prescribed first-aid treatment at site of emergency, or in specially-equipped vehicle, performing such activities as application of splints, administration of oxygen or intravenous injections, treatment of minor wounds or abrasions, or administration of artificial resuscitation. Communicates with professional medical personnel at emergency treatment facility to obtain instructions regarding further treatment and to arrange for reception of victims at treatment facility. Assists in removal of victims from vehicle and transfer of victims to treatment center. Assists treatment center admitting personnel to obtain and record information related to victims' vital statistics and circumstances of emergency. Maintains vehicles and medical and communication equipment and replenishes first-aid equipment and supplies. May assist in controlling crowds, protecting valuables, or performing other duties at scene of catastrophe. May assist professional medical personnel in emergency treatment administered at medical facility.

Ambulance Driver - (D.O.T. 913.683-010) - Drives the ambulance to transport sick, injured, or convalescent persons. Places the patient on the stretcher and loads the stretcher into the ambulance, usually with the help of the ambulance attendant. Changes soiled linen on the stretchers and administers first aid as needed. Uses skill and knowledge of driving to avoid sudden motions detrimental to patients.

(NOTE: Several occupations dealing with the care of trauma victims have emerged since the 1977 edition of the D.O.T. was published. Because of the importance of having qualified, trained health service personnel available at a moment's notice, trauma rooms have been installed in many of the larger hospitals. Many of the health occupations will specialize in the care of trauma victims and may be designated as nurse, trauma; physician, trauma; surgeon, trauma, etc.

ADMINISTRATION OF HEALTH SERVICES

Hospital Administrator - (D.O.T. 187.117-010) - Sees that all the hospital's objectives are carried out—providing services for the sick and injured, furthering scientific knowledge, providing professional training, and promoting community health. Is directly responsible to the hospital's governing body who set the broad policies under which the hospital operates. Is also the hospital's representative to the community. The administrator is responsible for developing an effective team of the physicians, nurses, dietitians, pharmacists, housekeepers, engineers, and others who work in the hospital, and for seeing that adequate supporting facilities, services, and equipment are available. Holds a community trust; it is his/her obligation to see that the hospital provides care of the highest possible quality at the lowest possible cost to the consumer. May also be an administrator in a nursing home.

Medical Officer - (D.O.T. 070.101-046) - Plans and participates in medical care or research programs in hospitals, clinics, or other public medical facilities. Provides medical care for eligible persons and institutes programs of preventive health care in counties, cities, or other government or civic divisions. Gives vaccinations, imposes quarantines, and establishes sanitary and other health standards for hospitals, restaurants, and other public places. May have the responsibility for health services of a county and be designated as health officer, county.

Admitting Officer - (D.O.T. 205.137-010) - Arranges for admission of patients to the hospital. Interviews patients or relatives to obtain necessary personal and financial data and to determine their eligibility for admission. Assigns accommodations based on the physician's admittance orders, patient's preference, nature of the illness, and availability of space. Prepares records of admission, transfer, and other data that may be required.

Executive Housekeeper - (D.O.T. 187.167-046) - Directs institutional housekeeping program to ensure clean, orderly, and attractive conditions of the establishment. Establishes standards and procedures for work of the housekeeping staff and plans work schedules to ensure adequate service. Inspects and evaluates the physical condition of the establishment and submits to the management recommendations for painting, repairs, furnishings, relocation of equipment, and relocation of space. Organizes and directs departmental training programs, resolves personnel problems, and hires new employees.

PERSONAL, COMMUNITY, AND INDUSTRY HEALTH SERVICES

Community Services and Health Education Officer - (D.O.T. 079.167-010) - Plans and directs statewide programs of public health education and promotes the establishment of local health services. Directs workers engaged in preparation and distribution of health information materials, such as brochures, films, weight charts, and first-aid kits. Promotes the establishment or expansion of local health services and provides technical assistance to individuals and groups conducting health conferences, workshops, and training courses. Coordinates special health education campaigns during epidemics, rabies outbreaks, instances of food poisoning, and similar emergencies.

Community Health Educator - (D.O.T. 079.117-014) - Plans, organizes, and directs health education programs for group and community needs. Conducts community surveys and collaborates with other health specialists and civic groups to ascertain health needs, develops desirable health goals, and determines availability of professional health services. Develops and maintains cooperation between public, civic, professional, and voluntary agencies, and prepares and disseminates educational and informational materials. Promotes health discussions in schools, industry, and community agencies.

Community Health Nurse - (D.O.T. 075.124-014) - Renders nursing services concerned with public health, working in government or voluntary public health agencies, and instructs lay persons in health education and disease prevention. Visits homes to render nursing services and instructs families in care of patients and maintenance of healthful environments. Assists persons with social and emotional problems to secure aid through community resources, and teaches home nursing, maternal and child care, and other subjects related to individual and community welfare.

School Nurse - (D.O.T. 075.124-010) - Plans and carries out, in cooperation with medical authorities and administrative school personnel, policies, standards, and objectives of school health programs. Participates in medical examinations and reviews findings to evaluate health state of pupils and the progress of the programs. Instructs classes in subjects such as child care, first aid, and home nursing and establishes nursing policies to meet emergencies. Cooperates with school personnel in identifying and meeting social, emotional, and physical needs of school children. Administers immunizations and maintains health records of students.

Home Health Aid - (D.O.T. 354.377-014) - Cares for elderly, convalescent, or handicapped persons in patients' homes and performs any combination of the following tasks: changes bed linens, washes and irons patients' laundry, and cleans patients' quarters. Purchases, prepares, and serves food for the patient and other members of the family, following special prescribed diets. Assists patients into and out of beds, automobiles, or wheelchairs to lavatories and up and down stairs. Assists the patient to dress, bathe, and groom him/herself. Accompanies ambulatory patients outside the home, serving as guide, companion, and aide.

PHARMACEUTICAL SCIENCE AND SERVICES

Pharmacist Assistant - (D.O.T. 074.381-010) - Mixes and dispenses prescribed medicines and pharmaceutical preparations in absence of or under supervision of pharmacist. Compounds preparations according to prescriptions issued by medical, dental, or veterinary officers. Pours, weighs, or measures dosages and grinds, heats, filters, or dissolves and mixes liquid or soluble drugs and chemicals. Procures, stores, and issues pharmaceutical materials and supplies. Maintains files and records and submits required pharmacy reports.

Pharmacist - (D.O.T. 074.161-010) - Compounds and dispenses medications, following prescriptions issued by physician, dentist, or other authorized medical practitioner. Weighs, measures, and mixes drugs and other medicinal compounds, and fills bottles or capsules with correct quantity and composition of preparation. Dispenses nonprescription medication to public. Advises self-diagnosing and self-medicating patients, or provides information on potential drug interactions, potential adverse drug reactions, and elements of patient's history which might bear on prescribing decision when in advisory capacity to physician. Advises patient regarding storage for prescription medication. Assures that patient understands prescribed instructions. Answers patient's questions regarding prescription medication. Stores and preserves biologicals, vaccines, serums, and other drugs subject to deterioration, utilizing refrigeration and other methods. Orders and maintains supply of drugs, chemicals, and other pharmaceutical stock. Ensures specified quality and potency of materials for medical use. May act as consultant to civic groups and health practitioners on matters pertaining to pharmacy. May assay medications to determine identity, purity, and strength. May instruct interns and other medical personnel on matters pertaining to pharmacy, or teach in college of pharmacy. May work in particular area and be designated pharmacist, community; pharmacist, hospital.

PROFESSIONAL MEDICAL SUPPORTIVE PERSONNEL

Licensed Practical Nurse - (D.O.T. 079.374-014) - Cares for ill, injured, convalescent, and handicapped persons in hospitals, clinics, private homes, sanitariums, and similar institutions. Takes and records temperature, blood pressure, and pulse and respiration rate. Dresses wounds, gives enemas, douches, alcohol rubs, and massages. Applies compresses, ice bags, and hot water bottles. Observes patients and reports adverse reactions to medical personnel in charge. Administers specified medication, and notes time and amount on patients' charts. Assembles and uses such equipment as catheters, tracheotomy tubes, and oxygen supplies. Performs routine laboratory work, such as urinalysis. Sterilizes equipment and supplies, using germicides, sterilizer, or autoclave. Prepares food trays and feeds patients. Records food and fluid intake and output. Bathes, dresses, and assists patients in walking and turning. Cleans rooms, makes beds, and answers patients' calls. Washes and dresses bodies of deceased persons. Must pass state board examination and be licensed. May assist in delivery, care, and feeding of infants.

Respiratory Therapist - (D.O.T. 079.361-010) - Administers respiratory therapy care and life support to patients with deficiencies and abnormalities of cardiopulmonary system, under supervision of physician and by prescription. Sets up and operates devices, such as respirators, mechanical ventilators, therapeutic gas administration apparatus, environmental control systems, and aerosol generators. Observes equipment gauges to ensure specified volumes are maintained. Performs bronchopulmonary drainage and assists patient in performing breathing exercises. Monitors patient's physiological responses to therapy, as well as equipment function. Consults with physician in event of adverse reactions. Maintains patient's chart that contains pertinent identification and therapy information. Inspects and tests respiratory therapy equipment to ensure proper operating condition.

Orders major repairs when needed. May demonstrate respirator care procedures to trainees and other health care personnel.

Nurse, General Duty - (D.O.T. 075.374-010) - Renders general nursing care to patients in hospital, infirmary, sanitarium, or similar institutions. Administers prescribed medications and treatments in accordance with approved nursing techniques. Prepares equipment and aids physician during treatments and examinations of patients. Observes patient, records significant conditions and reactions, and notifies supervisor or physician of patient's condition and reaction to drugs, treatments, and significant incidents. Takes temperature, pulse, blood pressure, and other vital signs to detect deviations from normal and determines progress of patient. May rotate among various clinical services of institution, such as obstetrics, surgery, orthopedics, outpatient and admitting, pediatrics, psychiatry, and tuberculosis. May prepare rooms, sterile instruments, equipment, and supplies, and handing, in order of use, to assist surgeon or obstetrician in operations and deliveries. May make beds, bathe and feed patients, and assist in their rehabilitation. May serve as leader for group of personnel rendering nursing care to number of patients.

Nurse Anesthetist - (D.O.T. 075.371-010) - Administers intravenous, spinal, and other anesthetics to render persons insensible to pain during surgical operations, deliveries, or other medical and dental procedures. Positions patient and administers prescribed anesthetic in accordance with standardized procedures, regulating flow of gases or injecting fluids intravenously or rectally. Observes patient's reaction during anesthesia, periodically counting pulse and respiration, taking blood pressure, and noting skin color and dilatation of pupils. Administers oxygen or initiates other emergency measures to prevent surgical shock, asphyxiation, or other adverse conditions. Informs physician of patient's condition during anesthesia. Records patient's preoperative, operative, and postoperative condition, anesthetic and medications administered, and related data. May give patient postoperative care as directed.

Prosthesis - (D.O.T. 078.261-022) - Provides care to patients with partial or total absence of limb by planning fabrication of, writing specifications for, and fitting devices known as prothesis under guidance of and in consultation with physician. Assists physician in formulation of prescription. Examines and evaluates patient's prosthetic needs in relation to disease entity and functional loss. Formulates design of prosthesis and selects materials and components. Makes casts, measurements, and model modifications. Performs fitting, including static and dynamic alinements. Evaluates prosthesis on patient and makes adjustments to assure fit, function, comfort, and workmanship. Instructs patient in prosthesis use. Maintains patient records. May supervise prosthetics assistants and other personnel. May supervise laboratory activities relating to development of prosthesis. May lecture and demonstrate to colleagues and other professionals concerned with practice of prosthetics. May participate in research.

Occupational Therapist - (D.O.T. 076.121-010) - Plans, organizes, and conducts occupational therapy program in hospital, institution, or community setting to facilitate rehabilitation of mentally, physically, or emotionally handicapped. Plans program involving activities, such as manual arts and crafts, practice in function, prevocational, vocational, and homemaking skills and activities of daily living, and participation in sensorimotor, educational, recreational, and social activities designed to help patients regain physical or mental functioning or adjust to handicaps. Consults with other members of rehabilitation team to select activity program consistent with needs and capabilities of each patient and to coordinate occupational therapy with other therapeutic activities. Selects constructive activities suited to individual's physical capacity, intelligence level, and interest to upgrade patient to maximum independence, prepare patient for return to employment, assist in restoration of functions, and aid in adjustment to disability. Teaches patients skills and techniques required for participation in activities and evaluates patients' progress. Designs and constructs special equipment for patient and suggests adaptations of patient's work-living environment. Requisitions supplies and equipment. Lays out materials for patients' use and cleans and repairs tools at end of sessions. May conduct training programs or participate in training medical and nursing students and other workers in occupational therapy techniques and objectives. May design, make, and fit adaptive devices, such as splints and braces, following medical prescription.

Physical Therapist - (D.O.T. 076.121-014) - Plans and administers medically prescribed physical therapy treatment programs for patients to restore function, relieve pain, and prevent disability following disease, injury, or loss of body part, working at hospital, rehabilitation center, nursing homes, home-health agency, or in private practice. Reviews and evaluates physician's referral (prescription) and patient's medical records to determine physical therapy treatment required. Performs patient tests, measurements, and evaluations, such as range-of-motion and manual-muscle tests, gait and functional analyses, and body-parts measurements, and records and evaluates findings to aid in establishing or revising specifics of treatment programs. Plans and prepares written treatment program based on evaluation of available patient data. Administers manual therapeutic exercises to improve or maintain muscle function, applying precise amounts of manual force and guiding patient's body parts through selective patterns and degrees of movement. Instructs, motivates, and assists patients in nonmanual exercises, such as active regimens, isometric, and progressive-resistive, and in functional activities, such as ambulation, transfer, and daily-living activities, using weights, pulleys, exercise machines, mats, steps, and inclined surfaces, and assistive and supportive devices, such as crutches, canes, parallel bars, orthoses, and prostheses. Administers treatments involving application of physical agents, such as light, heat, water, and electricity, using equipment such as hydrotherapy tanks and whirlpool baths, moist packs, ultraviolet and infrared lamps, low-voltage generators, and diathermy and ultrasound machines; evaluates effects of treatments at various intensities and durations and adjusts treatments to achieve maximum benefit.

MEDICAL PROFESSIONS

Cardiologist - (D.O.T. 070.101-014) - Treats diseases of heart and its functions. Examines patient for symptoms indicative of heart disorders, using stethoscope, electrocardiograph, X-ray machine, and variety of laboratory equipment. Studies X-ray photographs and electrocardiograph recordings to aid in making diagnoses. Prescribes medications and recommends dietary and work activity program, as indicated. Refers patient to surgeon specializing in cardiac cases when need for corrective surgery is indicated. May engage in research to study anatomy of and diseases peculiar to heart.

Dermatologist - (D.O.T. 070.101-018) - Diagnoses and treats diseases of human skin. Examines skin to determine nature of disease, taking blood samples, smears from affected areas, and performing other laboratory procedures. Examines specimens under microscope, and makes various chemical and biological analyses and performs other tests to identify disease-causing organisms or pathological conditions. Prescribes and administers medications, and applies superficial radiotherapy and other localized treatments. Treats abscesses, accidental skin injuries, and other skin infections, and surgically excises cutaneous malignancies, cysts, birthmarks, and other growths. Treats scars, using dermabrasion.

General Practitioner - (D.O.T. 070.101-002) - Attends to variety of medical cases in general practice. Examines patients, utilizing stethoscope, sphygmomanometer, and other instruments. Orders or executes various tests, analyses, and X-rays to provide information on patient's condition. Analyzes reports and finding of tests and of examination, and diagnoses condition. Administers or prescribes treatments and drugs. Inoculates and vaccinates patients to immunize them from communicable diseases. Promotes health by advising patients concerning diet, hygiene, and methods for prevention of disease. Provides prenatal care to pregnant women, delivers babies, and provides postnatal care to mother and infant (obstetrician). Reports births, deaths, and outbreak of contagious diseases to governmental authorities. May make house and emergency calls to attend to patients unable to visit office or clinic. May conduct physical examinations of insurance company applicants to determine health and risk involved in insuring applicant.

Ophthalmologist - (D.O.T. 070.101-058) - Diagnoses and treats diseases and injuries of eyes. Examines patient for symptoms indicative of organic or congenital ocular disorders, and determines nature and extent of injury or disorder. Performs various tests to determine vision loss. Prescribes and administers medications, and performs surgery, if indicated. Directs remedial activities to aid in regaining vision, or to utilize sight remaining, by writing prescriptions for corrective glasses and instructing patient in eye exercises.

Anesthesiologist - (D.O.T. 070.101-010) - Administers anesthetics to render patients insensible to pain during surgical, obstetrical, and other medical procedures. Examines patient to determine degree of surgical risk and type of anesthesia and sedation to administer, and discusses findings with medical practitioner concerned with case. Positions patient on operating table and administers local, intravenous, spinal, caudal, or other anesthetic according to prescribed medical standards. Institutes remedial measures to counteract adverse reactions or complications. Records type and amount of anesthetic and sedation administered and condition of patient before, during, and after anesthesia. May instruct medical students and other personnel in characteristics and methods of administering various types of anesthetics, signs and symptoms of reactions and complications, and emergency measures to employ.

Surgeon - (D.O.T. 070.101-094) - Performs surgery to correct deformities, repair injuries, prevent diseases, and improve function in patients. Examines patient to verify necessity of operation, estimate possible risk to patient, and determine best operational procedure. Reviews reports of patient's general physical condition, reactions to medications, and medical history. Examines instruments, equipment, and surgical setup to ensure that antiseptic and aseptic methods have been followed. Performs operations, using variety of surgical instruments and employing established surgical techniques appropriate for specific procedures. May specialize in particular type of operation, as on nervous system, and be designated neurosurgeon. May specialize in skin grafts and bone and tissue transplants to restore or repair damaged, lost, or deformed parts of face and body, and be designated plastic surgeon. May specialize in correction or prevention of skeletal abnormalities utilizing surgical, medical, and physical methodologies and be designated orthopedic surgeon.

Podiatrist - (D.O.T. 079.101-022) - Diagnoses and treats diseases and deformities of human foot. Diagnoses foot ailments, such as tumors, ulcers, fractures, skin or nail diseases, and congenital or acquired deformities, utilizing diagnostic aids, such as urinalysis, blood tests, and X-ray analysis. Treats deformities, such as flat or weak feet and foot imbalance, by mechanical and electrical methods, such as whirlpool or paraffin baths and short wave and low voltage currents. Treats conditions, such as corns, calluses, ingrowing nails, tumors, shortened tendons, bunions, cysts, and abscesses by surgical methods, including suturing, medications, and administration of local anesthetics. Prescribes drugs. Does not perform foot amputations. Corrects deformities by means of plaster casts and strappings. Makes and fits prosthetic appliances. Prescribes corrective footwear. Advises patients concerning continued treatment of disorders and proper foot care to prevent recurrence. Refers patients to physician when symptoms observed in feet and legs indicate systemic disorders, such as arthritis, heart disease, diabetes, or kidney trouble. May treat bone, muscle, and joint disorders and be designated podiatrist, orthopedic; children's foot diseases and be designated podopediatrician, or perform surgery and be designated podiatric surgeon.

UNIT X

HEALTH

ACTIVITY SHEET I—UNSCRAMBLING HEALTH OCCUPATIONS

Directions: Below you will find listed 25 health occupations. Using the list as a guide, unscramble the occupations.

Emergency Medical Technician
Microbiology Technologist
Hospital Administrator
Ultrasound Technologist
Occupational Therapist

Dental Hygienist
Opthalmologist
Cardiologist
Dermatologist
Psychiatrist

Pharmacist
Counselor
Nurse
Surgeon
Dentist

Respiratory Therapist
Admitting Officer
Physical Therapist
General Practitioner
Ambulance Driver

Orthodontist
Pedodontist
Psychologist
Pathologist
Prosthesis

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UNIT X

HEALTH

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in suplementary section 1 of this guide.
B. Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in suplementary section 2.
C. Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D. Recognize proper safety standards and hazzards associated with the duties of a variety of careers.	
E. Identify skills that a variety of career have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classroom.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers

H. Exhibit productive work habits and attitudes

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Health cluster found in the Information Sheet may be used as a guide for resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT X

HEALTH

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. Many occupations classified in the health cluster have among their work tasks to inform others of preventative measures to avoid illness or injury. Use the following examples as a guide for students to make presentations to the class.

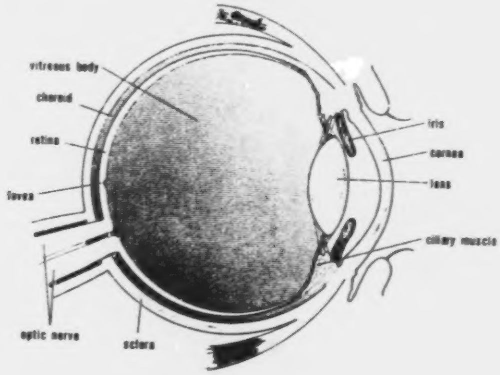
1. The dental hygienist informs others of oral hygiene. Have students use charts, motion pictures, and other visual aids, to explain the correct procedures for oral hygiene.

2. The emergency medical technician must know the correct first aid procedures. Have the students use first aid booklets as a guide to demonstrate to the class the correct first aid procedures.

3. The community services and health education officer promotes the establishment and/or expansion of local health services. Have the students prepare a booklet with the information concerning health services available in your community. Addresses, telephone numbers, and services performed should be included.

4. The wellness instructor is a new and emerging occupation in the labor force. The wellness instructor is usually employed by aerobic centers, businesses, and industries. The wellness instructor informs others of ways to stay well, both mentally and physically. Have the students lead sessions of aerobic exercises for the class, stress management techniques, etc.

B. Have the students draw a picture of the eye on poster board and explain how the eye functions to create vision.



C. Have the students prepare a report on a biography of someone who has made a contribution to the health field. Examples are: Clara Barton, Jonas Salk, Louis Pasteur, the Curies, etc.

UNIT X

HEALTH
UNIT TEST

A. Name five occupations in the Health cluster.

1.

2.

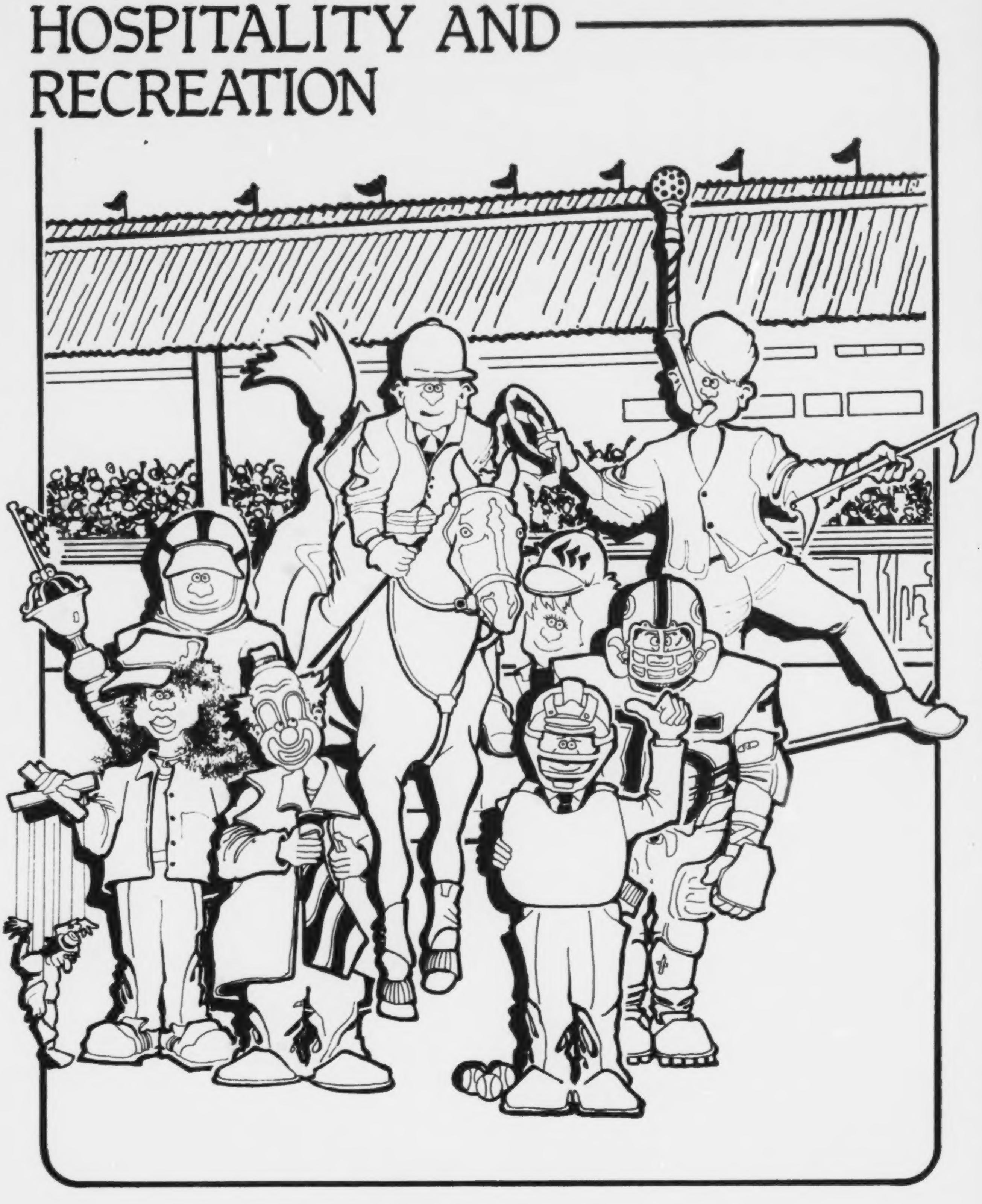
3.

4.

5.

B. Discuss an occupation found in the Health cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

HOSPITALITY AND RECREATION



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UNIT XI

HOSPITALITY AND RECREATION

I. What is the Hospitality and Recreation Cluster?

  A. It is a group of occupations involved in promoting entertainment and tourism.

  B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

  A. **Travel bureaus/travel agencies**—occupations involved in providing travel information and accommodations

  B. **Transportation**—occupations involved in providing services for traveler comfort

  C. **Public, industrial, and private recreation**—occupations involved in performing or arranging recreation and entertainment activities

  D. **Natural resources recreation**—occupations involved in organizing and preserving natural sources of recreation

III. Examples of Occupations

TRAVEL BUREAUS/ TRAVEL AGENCIES

Information Clerk - (D.O.T. 249.467-010) - Gives general information on tours, cruises, fares, hotels and their rates, sightseeing trips, and places of interest.

Ticket Clerk - (D.O.T. 238.367-026) - Issues tickets and collects money. Deals not only with the public but also with the transportation companies involved. Must telephone or write the transportation or sightseeing company, hotel, resort, or camp and confirm the sale of the space to the individual involved. Is empowered to issue tickets, collect payment, collect taxes, and deduct the agency's commission.

Travel Counselor - (D.O.T. 238.167-014) - Actually maps the trip, on the basis of information given by the client as to time available, number of people involved, their ages, the money available, and preferences as to the type of trip. Makes suggestions, giving expert opinion on ideas presented.

Travel Agency Clerk - (D.O.T. 238.367-030) - Answers telephone inquiries, answers mail, keeps records, and does general office work.

Travel Agency Supervisor and Executive - (D.O.T. 238.367-030) - Attends to overall business concerns of the agency, depending upon its size. May also work as agency representative.

Travel Agent - (D.O.T. 252.157-010) - Sells the services of the railroads, bus lines, airlines, steamship lines, sightseeing companies, hotels, resorts, camps, and the larger agents or travel wholesalers directly to the public. Keeps account of tours, etc., provided by transportation companies and advertises accordingly. May plan trip for tourists and arrange accommodations.

TRANSPORTATION

(NOTE: Many of these occupations may also by classified in the Transportation Cluster.)

Passenger Agents and Clerks - (D.O.T. 238.367-026) - Distributes company literature, notifies travel-information organizations of all changes in rates, schedules, equipment, and accommodations. Must handle the vast clerical job of issuing tickets, collecting money, assigning space, giving refunds, making cancellations, and adjusting complaints. Provides estimates to the operating divisions of equipment needed for every service, for holiday rushes and vacation seasons, for conventions, and special events. May be designated railroad passenger department agents and clerks, steamship passenger department clerks and agents, airline clerks and agents.

Purser - (D.O.T. 197.167-014) - Checks and is responsible for protection of passengers' valuables left in office, arranges for their seats in the dining room, purchases the deck chairs and cushions for duration of the voyage, cashes traveler's checks, or changes their money to foreign currency.

Flight Attendant - (D.O.T. 352.367-014) - Cares for comfort of passengers, provides coffee, snacks, lunches, information, etc. Must be expert swimmer and accomplished linguist.

Steward (Deck) - (D.O.T. 350.677-022) - Arranges for comfort of the passengers of deck, sets up deck chairs, arranges cushions, blankets, and pillows, provides bridge tables and cards when desired, and generally caters to the needs of the traveler.

Tour Conductor - Points out historical or scenic locations to tourists, gives background of area, and answers questions.

Tour Director - Accompanies touring group on trip, provides information to tourists, and arranges for emergency return flights, etc.

Tourist Recreation Director or Supervisor - Directs or supervises recreation personnel on board ship and at destination.

Hotel Representative - Supplements work of travel agents but usually does not compete with them. Makes direct bookings for hotels, keeps a current listing of available accommodations, mails literature, and otherwise acts just as the hotel's own promotion staff would act. Also sends out trained workers to canvass commercial travel agents, service bureaus, and other agencies to make sure that such agents and bureaus have full information regarding the clients of the firm. (For more information, see D.O.T. 238.362-014)

Transportation Clerk - (D.O.T. 238.367-030) - Provides travel information and arranges accommodations for tourists. Discusses routes, time schedules, rates, and types of accommodations with patrons to determine their preferences and makes reservations. May arrange for visas and other documents required by foreign travelers. May contact individuals and groups to sell package tours on own initiative.

PUBLIC, INDUSTRIAL, AND PRIVATE RECREATION

Umpire - (D.O.T. 153.267-018) - Officiates at sporting events and observes actions of participants in events to detect infractions of rules, and makes final decisions on disputable matters according to established regulations, consulting opposing teams or players when required. When concerned only with determining validity of goals, order of participants that reach finish line, or out-of-bound plays, may be designated accordingly as finish judge, goal umpire, line judge.

Automobile Racer - (D.O.T. 153.243-010) - Drives automobile racing car in competition road races, which includes participation in speed and elimination trial races to qualify car for race, analysis of speed and position of other cars to determine when and where to drive car so as to be in favorable position to win. May perform maintenance work on car.

Acrobat - (D.O.T. 159.247-010) - Entertains audience by performing difficult and spectacular feats, such as leaping, tumbling, and balancing, alone or as a member of a team. Originates act or adapts stock presentations. May use equipment, such as chairs and teeter board. May juggle various articles. May be designated acrobatic juggler. May perform feats requiring bodily contortions.

Acrobatic Rigger - (D.O.T. 962.684-010) - Erects equipment for aerial and acrobatic acts in show, such as circus, variety show, and carnival, working as a member of a crew by drilling holes in the floor of the stage or platform with electric drill and fastening metal floor plates to hold vertical steel rods. Lowers and raises trapezes and nets during performance.

Aerialist - (D.O.T. 159.247-014) - Performs gymnastic feats of skill and balance while swinging on trapeze, turning somersaults, or executing flying stunts alone or as a member of a team.

Circus Supervisor - (D.O.T. 969.137-010) - Supervises and coordinates activities of workers engaged in cleaning, moving equipment, and erecting tents and rigging in circus, carnival, or other exhibition, performing duties as described under Supervisor.

Circus Laborer - (D.O.T. 969.687-010) - Performs variety of tasks in cleaning floors and moving equipment for amusement show, such as fair, circus, or carnival. May work as a member of a team to erect and dismantle canvas tents and place seats.

Circus Train Supervisor - (D.O.T. 910.137-018) - Supervises and coordinates activities of workers engaged in loading and unloading circus animals and equipment on and off train.

Clown - (D.O.T. 159.047-010) - Entertains audience by appearing in clown costume and makeup and performing original or stock comedy routines.

Comedian - (D.O.T. 159.047-014) - Attempts to make audience laugh by telling jokes, delivering comic lines, singing humorous songs, performing comedy dances or walks, or facial contortions, wearing funny costumes, or resorting to any similar device to amuse his audience. May do impersonations.

Aquatic Performer - (D.O.T. 159.347-014) - Performs underwater ballet routines to entertain spectators, using air line and utilizing simultaneous techniques of swimming and dancing. May serve as life guard, sell tickets, or perform other duties when not participating in show. May be designated as mermaid.

Mime - (D.O.T. 159.047-022) - Presents serious, humorous, or burlesqued interpretations of emotions, dramatic actions, and various situations through body movements, facial expressions, and gestures.

Ring Conductor - (D.O.T. 159.367-010) - Blows whistle in circus ring as signal for performers to begin or end their acts for entertainment of audience.

Stunt Performer - (D.O.T. 159.341-014) - Performs dare-devil feats, such as diving stunts, perilous rides, or spectacular jumps for dramatic productions. May also be designated as thrill performer, wire walker, or fire eater.

Astrologer - (D.O.T. 159.207-010) - Forecasts future trends or events about persons, countries, companies, or animals by interpreting significance of planetary positions when charted on a horoscope.

Fortune Teller - (D.O.T. 159.647-018) - Professes to tell past, present, or future events by extraordinary intuitive or spiritual insight that enables him/her to perceive things out of a range of ordinary perception, May also be designated as card reader, crystal gazer, palmist, seer, or tea-leaf reader.

Graphologist - (D.O.T. 159.247-018) - Professes to judge patron's character by studying his/her handwriting, observing in detail formation of letters.

Hypnotist - (D.O.T. 159.647-010) - Entertains audience by inducing hypnotic trance in subjects, occasionally using members of audience as subjects and commanding hypnotized subject to perform specific tasks.

Magician - (D.O.T. 159.041-010) - Performs original and stock tricks of illusion and sleight-of-hand to entertain and mystify audience. (A prestidigitator is a magician who entertains an audience by performing sleight-of-hand tricks, using such props as cards and cigarettes.) May use members of audience in act and remove their jewelry, wallets, or watches without their knowledge.

Mind Reader - (D.O.T. 159.647-018) - Entertains audience by demonstrating professed ability to perceive another person's thoughts without normal means of communication, usually using members of his audience as subjects and working alone or as a member of act.

Ventriloquist - (D.O.T. 159.044-010) - Entertains audience by speaking in such manner that voice appears to come from source other than vocal chords, frequently from dummy or hand puppet. Changes positions of dummy or puppet during performance to give illusion of voice and movement.

Puppeteer - (D.O.T. 159.041-014) - Originates puppet show and moves strings or wires of puppets to animate them for entertainment of audience. Carves or shapes parts of puppet, sews together articles of clothing, and assembles puppets, using wire, string, and handtools. Talks or sings during performance, giving illusion of voice to puppets.

Waiter/Waitress-Entertainer - (D.O.T. 311.477-030) - Entertains and serves patrons of eating and drinking establishments, such as cocktail lounges, night clubs, restaurants, or taverns. Serves beverages and food to patrons of establishment and dances, sings, or plays musical instruments to provide entertainment for customers. May be designated according to type of entertainment as dancing waiter, singing waiter, singing waitress.

Usher - (D.O.T. 344.677-014) - Includes occupations concerned with taking tickets, distributing programs, and escorting patrons to seats in public places. May be designated as Head Usher - (D.O.T. 344.137-010), Ticket Taker - (D.O.T. 344.667-010), or Press-Box Custodian.

Bowling Instructor - (D.O.T. 153.227-018) - Teaches individuals or groups of persons how to bowl by explaining and demonstrating techniques and methods of bowling. Explains bowling rules and regulations and method of keeping score.

Ice Skating Instructor - (D.O.T. 153.227-018) - Instructs individuals or groups in ice skating techniques by demonstration and oral presentation, according to knowledge of skating principles, techniques of body balance, and experience. May participate in exhibitions of figure, dance, and free skating.

Judo Instructor - (D.O.T. 153.227-018) - Conducts individual and group classes in Judo. Lectures on history and purpose of Judo. Lectures and demonstrates use of anatomical knowledge to exploit weak parts of adversary's body. Explains and illustrates principles of leverage, foot action, and body movement.

Physical Education Instructor - (D.O.T. 099.224-010) - Instructs students in physical education activities in educational institution. Teaches field, court, and combative sports to individuals or groups, utilizing knowledge of sport techniques and of physical capabilities of students. Organizes, leads, instructs, and referees indoor and outdoor games, such as volleyball, baseball, and basketball. Instructs individuals or groups in beginning or advanced calisthenics, gymnastics, or corrective exercises, determining type and level of difficulty of exercises, corrections needed, and appropriate movements, applying knowledge of sports, physiology, and corrective techniques. Teaches and demonstrates use of gymnastic apparatus, such as trampolines and corrective weights. (Also see the health cluster.)

Riding Instructor - (D.O.T. 153.227-018) - Instructs pupils in techniques of horsemanship. Teaches pupils how to mount horse and how to post. Explains and demonstrates methods of controlling horse's actions in walking, trotting, cantering, pacing, and in various other gaits. May drill advanced pupils in art of jumping, horsemanship competitions, and in trail riding.

Swimming Instructor - (D.O.T. 153.227-018) - Teaches individuals or groups swimming and diving techniques, evaluating abilities of students to determine instruction procedures. May give lifesaving and water-safety instruction, such as personal safety, small boat safety, and safe handling of self-contained underwater breathing apparatus. May teach and referee water games such as water polo and various relays.

Ski Instructor - (D.O.T. 153.227-018) - Instructs and demonstrates techniques of skiing to individuals or groups of persons. Explains walking, turning, stopping, bending knees, and balancing body while on skis. Demonstrates physical exercises required to maintain physical fitness. Recommends ski gear and wearing apparel to use for skiing. Explains safety measures to follow while skiing. Observes persons to detect mistakes and recommends steps to follow to eliminate them. May participate in ski racing and ski jumping competition.

Animal Keeper - (D.O.T. 412.674-010) - Supervises and coordinates activities of keepers in attending to animals in circus, based on knowledge of characteristics, living habits, and requirements of various animals. May coordinate training of animals for circus performances.

Dog Trainer - (D.O.T. 159.224-010) - Trains dogs to perform tricks, hunt, track, obey, protect life and property, run races, or lead the blind by verbal commands or signals by evaluating behavior and performance of each dog. Studies characteristics of each breed to learn how dogs should be handled and to detect signs of sickness. Directs dogs to perform tricks in circus ring or on stage. Rehearses dog, according to script, for motion picture or television film. Also see Personal Services cluster.

Horse Trainer - (D.O.T. 159.224-010) - Trains horses for racing and follows plans adapted to peculiarities of each horse by familiarizing horses with racetrack starting devices, harness, bridles, saddles, and other riding equipment. Conditions horses for competitive racing by exercise and workouts to bring them to their best physical condition. Gives directions to horse exerciser and other workers engaged in grooming, feeding, and the general care of horses. May also train and direct horses to perform tricks for circus or stage audience, to follow routine performed by polo or artillery horses, or to compete at horse shows, evaluating ability and performance of each horse. Also see Personal Services cluster.

Equestrian - (D.O.T. 159.334-010) - Entertains audience by riding horses at circus, carnival, exhibition, or horse show, performing acrobatic stunts on saddleless horse or feats of equestrian skill and daring. When performing stunts on horse without saddle, may be designated as bareback rider.

Jockey - (D.O.T. 153.224-010) - Rides racehorse at racetrack and receives riding instructions from horse trainer before race. Analyzes ability and peculiarities of his/her horse and other horses to determine how he/she should ride.

Camp Counselor - (D.O.T. 159.124-010) - Directs recreational and avocational activities of children or adults at vacation or work camp. Organizes and leads groups in sports, nature lore, and similar outdoor recreational activities. Instructs learners and coaches group members to improve their proficiency in sports and other activities. Safeguards health of campers. Maintains discipline and otherwise guides conduct of juvenile campers. May be designated according to type of camp activity, such as dramatics counselor, swimming counselor, etc.

Bowling Floor Desk Clerk - (D.O.T. 340.367-010) - Assigns bowling alleys to patrons and collect fees, Also reserves alleys for bowling league or individual(s). Issues score sheets and alley numbers to patrons. Observes players to determine misuse of alleys or other equipment. Records number of games played and receipts collected. Rents bowling shoes to patrons.

Racker - (D.O.T. 340.477-010) - Positions pool balls on table, using a triangular rack. Performs such services as supplying chalk to players, cleaning table with brush, and placing cues in cue rack after game. Computes and collects fees from players or writes fees on slips for collection by manager or cashier. May inspect cue tips and replace them, using glue and knife.

Kennel Manager - (D.O.T. 349.367-010) - Performs the following tasks at a dog-racing track before each race: verifies the credentials of each dog entered in race, comparing color, name, and sex of dog and name owner with information on racing form. Insures that dogs are admitted to assigned stalls, notifying other workers to round up appropriate dogs in advance of each race. Guards dogs to prevent unauthorized persons from injuring them or attempting illegally to influence their performance. Notifies owner or veterinary personnel in cases of injury or suspected illness. Cleans racing stalls after each race. Notifies track officials of irregularities, as required by racing regulations. Also see Personal Services cluster.

Athlete Manager - (D.O.T. 153.117-014) - Manages affairs of athlete by negotiating with promoters or others to settle contracts and business matters and directs training. Prescribes exercises, rest periods, and diet to be followed by athlete. Directs athletic trainer in conditioning athlete. Gives directions to protege in athletic techniques. Determines strategy to be followed by athlete in competition with others.

Athletic Director - (D.O.T. 090.117-022) - Plans, administers, and directs athletic activities; interprets and participates in formulating extramural athletic policies. Employs and discharges athletic employees on own initiative or at direction of board in charge of athletics. Assumes responsibility for athletic publicity. Oversees and directs athletic staff. Prepares budget estimates and is responsible for all expenditures and reports.

Athletic Equipment Custodian - (D.O.T. 969.367-010) - Keeps stock of new and used athletic supplies, such as balls, gloves, bats, shoes, and uniforms, and issues supplies to players. Packs and unpacks supplies for road trips and insures that arrangements are made for their transportation. May wash soiled uniforms and other supplies in automatic washing machine or may arrange to have them laundered.

Athletic Team Manager - (D.O.T. 153.117-010) - Negotiates for players and directs professional athletic team. Directs conditioning and training of players. Selects players for positions on team and coaches them in techniques of game. Determines game strategy. Discusses and bargains with other clubs to sell or trade players. May also participate on team managed and be designated accordingly as Player-Manager.

Athletic Trainer - (D.O.T. 153.224-010) - Improves physical fitness of athletes for participation in various sports. Prescribes routine and corrective exercises to strengthen muscles. Recommends special diets to build up health and reduce over-weight persons. Massages parts of players' bodies to relieve soreness, strains, and bruises. Renders first aid to injured persons. May make arrangements for hotel accommodations and for transportation to other places for sports participants.

Professional Athlete - (D.O.T. 153.341-010) - Participates in competitive athletic events, such as football, boxing, hockey, tennis, golf, basketball, baseball, and soccer for personal enjoyment and monetary gain. Plays game and engages in sport conforming to established rules and regulations. May furnish information concerning plays to score-board operator, usually by telephone.

Booking Agent - (D.O.T. 191.117-014) - Books theatrical troupes, performers, motion pictures, or other popular attractions for entertainment in establishments he/she represents, such as night club, theater, or dance hall. Negotiates with representatives of attractions to arrange terms of contract and fees to be paid for engagement. Auditions new talent. Purchases advertising space, promotes newspaper publicity, and arranges for billing, according to contract agreements.

NATURAL RESOURCES RECREATION

Occupations in this family naturally overlap with those of other families, but they do include those concerned with recreational facilities provided by nature, that is, ocean and lake beaches, forests, wild life areas, etc. Providing recreational opportunities to enjoy the beauties and wonders of nature is a unique and fast-growing field.

Game Attendant - (D.O.T. 342.457-010) - Induces customers to purchase food or participate in games at concession booths in parks, carnivals, stadiums, or similar amusement places. Provides customers with game equipment or refreshments and collects fees for services. Cleans and repairs booth and keeps equipment in serviceable condition.

Lifeguard - (D.O.T. 379.667-014) - Monitors activities in swimming areas to prevent accidents. Cautions swimmers regarding unsafe areas. Rescues swimmers in danger of drowning and administers first aid, Maintains order in swimming areas. Inspects facilities for cleanliness. May clean and refill swimming pool. May conduct or officiate at swimming meets. May give swimming instructions. May also be classified in Personal Services cluster.

Zoo Keeper and Attendant - (D.O.T. 412.674-010) - Supervises care and exhibition of animals and birds at zoo. Examines animals to determine need for medical care. May bathe and groom animals. Cleans cages and feeds and waters animals.

Hunting and Fishing Guide - (D.O.T. 353.161-010) - Plans itinerary for hunting and fishing trips, guides and transports sports enthusiasts to hunting and fishing areas. Plans route that will afford best camping sites and hunting and fishing areas, utilizing knowledge of countryside. Explains hunting and fishing laws and insures that laws are obeyed. Drives motorboat or land vehicle to transport sports enthusiasts to hunting and fishing areas. Gives first aid to members of group in emergency.

UNIT XI

HOSPITALITY AND RECREATION

ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 20 occupations listed below in the Word Find. Look across, down, diagonally, and backwards.

Professional athlete
Clown
Astrologer
Jockey
Athletic trainer
Ventriloquist
Travel agent
Acrobat
Automobile racer
Flight attendant
Ice skating instructor
Travel advisor
Mermaid (Aquatic performer)
Tour director
Tour conductor
Aerialist
Umpire
Booking agent
Ring master
Camp counselor

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A U T O M O B I L E R A C E R T L U G I
C L R O W T N E G A L E V A R T A M A C
R N T R O T C U D N O C R U O T C P N E
O F L I G H T A T T E N D A N T R I O S
B R I N G M A S T E R Z F G R M O R P K
T Z R R O S I V D A L E V A R T B E J A
C A M P C O U N S E L O R R N Z A P O T
A U L T N C V N T L M O V E A E T O C I
T A N W M L O L F G H I J K L M N N K N
P R O F E S S I O N A L A T H L E T E G
R L L D R R E V W X G F S R Z A N L Y I
C C J R M E P R I C E S T K T I N I A N
F D O U A C U M P R I T R P A C F S I S
E C S O I T U A S T R O O L G E R T R T
N H K T D T V E N T R I L O Q U I S T R
L L T N E G A G N I K O O B Z C L O E U
A E Y U M P I E R I N G G Y C M A S T C
A B S O R E T N F R U A E R I A L I S T
A V I A T H L E T I C T R A I N E R A O
D T O U R D I R E C T O R C A M P C O R
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UNIT XI

HOSPITALITY AND RECREATION
ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze careeropportunities, including new and emerging occupations.

Choose from the activities in supplementary section 1 of this guide.

B. Demonstrate the ability to use a variety ofcurrent labor market information andresources, such as computer software andpersonal interviews, to analyze career opportunities.

Choose from the activities in supplementary section 2.

C. Identify resources which provide pertinent information concerning career opportunities,including new and emerging occupations.

D. Recognize proper safety standards and hazards associated with the duties of a variety of careers.

E. Identify skills that a variety of careers have in common and that are transferable amongmany careers.

Use the occupational report form found in supplementary section 3.

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Hospitality and Recreation cluster found in the Information Sheet may be used as a guide for resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT XI

HOSPITALITY AND RECREATION

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS CLASSIFIED IN THIS CLUSTER

Explain to the students that people in all walks of life, at all economic levels, and of all ages participate in leisure-time activities. Forecasters predict that in the future, people will have more time available to devote to leisure-time activities because of the increasing development of products which make our work and home tasks easier. The activities listed below will most likely require time outside of class for preparation. The activities, therefore, may be graded on a contract basis.

A. **Have the students think of their "dream vacation." They should think of the place they would like to visit, the amount of time they will spend there, what type of transportation they wish to use to get there, and the type of activities they wish to pursue on their vacations. Secure information from a travel agency (e.g., travel brochures, transportation charts, etc.) and have the students use this information to complete the travel itinerary on the following page.**

(NOTE: For a variation of the above activity, have the students write their information on index cards. The students should then be asked to exchange cards and complete the travel itinerary.)

B. **Tell the students that, in this activity, they will be camp counselors. They are required to prepare a schedule of recreational activities for the campers. The ages of the campers attending range from 8 to 12 years. The campers will be required to participate in these activities twice a day for 30 minutes for each of the five days they are attending. A list is provided below to assist students in thinking of recreational activities.**

ACTIVE GAMES

Red Light
Circle Soccer
Relays
Floor Hockey
Paddle Tennis
Frisbee
Red Rover
Marbles
Croquet
Hopscotch
Dodgeball
Horseshoes
Badminton
Basketball
Football

QUIET GAMES

Fortune Telling
Paper & Pencil Games
Jacks
Creative Writing
Dramatic Games
Art Projects

Debates
Mental Games
Word Games
Chess
Song Writing
Storytelling
Music

Nature Quiz
Word Games
Checkers
Poetry
Guessing Games
Card Games

TRAVEL ITINERARY

Customer ____________________

Destination ____________________

Transportation ____________________ Cost ________

____

LV. ____________________ ARV. ____________________

LV. ____________________ ARV. ____________________

LV. ____________________ ARV. ____________________

Lodging ____________________

____

Estimated Time of Arrival ____________________

Price per night ____________________

Total nights stayed ____________________

Total cost of lodging ____________________

Available recreational activities:

____

____

____

____

____

____

ARTS AND CRAFTS

- Cardboard Construction
- Costume Design
- Duplex Flower Crepe Paper
- Finger Painting
- Magic Craft Steel
- Map Making
- Needlework
- Paper Folding and Cutting
- Carving
  - Soap
  - Wood
  - Bone
- Knitting
- Macrame
- Painting
- Photography
- Poster Making
- Sand Craft
- Tile
- Weaving
- Basketry
- Dyeing and Coloring
- Tye Dye
- Cross stitching
- Leather Craft
- Making Scrap Books
- Model Aircraft
- Paper Craft
- Pipe Cleaners
- Printing
- Sewing
- Embroidery
- Drawing
- Bead Craft
- Quilting

Have the students complete a chart showing their recreational activities. The following may be used as a guide.

DAY	**ACTIVITY**
DAY 1	Relays Art Projects/Embroidery
DAY 2	Dodgeball Nature Quiz

C. **Explain that the availability of hospitality and recreation services is dependent upon: the population of the community, size of community, number of industries in community, and the financial resources of the community.**

1. Have the students survey the hospitality and recreation services available in your community. The following resources may be utilized: Yellow Pages, Chamber of Commerce, newspaper advertisements, on-site visits, etc. (Hint: You may wish to divide the class into groups and assign each group a special category—such as, hotels, restaurants, recreational facilities, etc.)

2. Based upon their research, have the students combine their information to form a Tourist Guide for visitors to their community. The Tourist Guide should include the location of the facilities, a short description, and the costs.

D. (**Name of your community**) Needs

1. Have the students interview family and friends to determine needed hospitality and recreation services. The following are examples of questions to use:

a. Do you ever travel to another location (other than our community) to participate in the leisure activities you enjoy?

b. If so, how often?

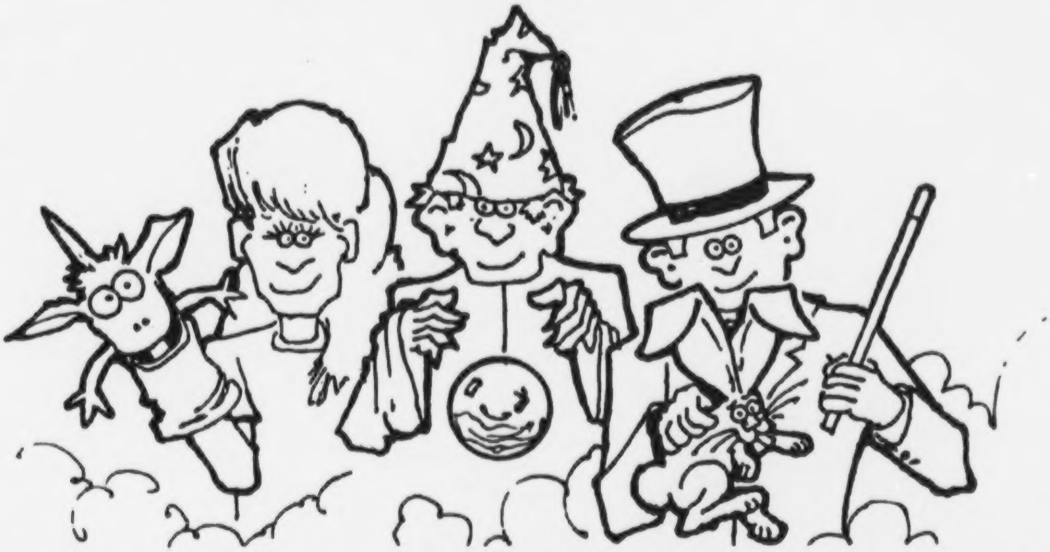
c. Explain the services this location provides.

d. Are there leisure services in our community which you would like to see more of?

e. Explain these services.

2. Have the students prepare a written and/or oral report. In the report, they should include the number of people interviewed and their responses. The students should then put their findings in the form of a recommendation for additional services.

E. Many of the occupations classified in the hospitality and recreation cluster have job descriptions that are very similar—they entertain others. Have the students choose an occupation that fits this description and entertain the class. Examples of occupations include: fortune tellers, magicians, ventriloquists, puppeteers, comedians, etc.



F. Many students in the 7th and 8th grades have aspirations of pursuing glamorous occupations, i.e., professional athletes, circus performers. The students, however, are usually unaware of the difficulty that exists in obtaining these occupations. Have your school librarian pull those biographies and autobiographies of people whose occupations would be classified in the Hospitality and Recreation cluster. Have the students complete the biography/autobiography report form found in the supplemental activities section of this guide.

G. Have the students pretend that they have just been hired by a travel agency. Have them design and prepare a travel brochure about a place (real or imaginary). Have the students include such things as geographic location, points of interest, climate, travel accommodations, etc. Brochures should be illustrated by using pictures from magazines and/or students' drawings.

UNIT XI

HOSPITALITY AND RECREATION
UNIT TEST

A. Name five occupations classified in the Hospitality and Recreation cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Hospitality and Recreation cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

MANUFACTURING

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UNIT XII

MANUFACTURING
INFORMATION SHEET

I. What is the Manufacturing Cluster?

   A. It is a group of occupations involved in the design and assembly of products.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Management**—occupations involved in supervising a manufacturing plant

   B. **Scientists**—occupations involved in basic research of products and manufacturing methods

   C. **Engineers**—occupations involved in the practical application of scientific findings

   D. **Technicians**—occupations involved in specialized operations in many areas of manufacturing

   E. **Skilled Workers**—occupations involved in work requiring high levels of ability without direct supervision

   F. **Semi-Skilled Workers**—occupations involved in work requiring the performance of routine tasks with little supervision

   G. **Unskilled Laborers**—occupations involved in work requiring physical effort and direct supervision

III. Examples of Occupations

MANAGEMENT

President-(D.O.T. 189.117-026) - Develops and administers policies of organization in accordance with corporation charter. Establishes operating objectives and policies for firm. Coordinates plans to ensure effective flow of work between divisions. Reviews progress and makes necessary changes in company plans. Directs preparation of major financial programs, such as pricing policies and salary-and-wage-schedules, to ensure operating efficiency and adequate investment and dividend returns. Plans and develops policies to maintain satisfactory company relations with employees, stockholders, and public. Evaluates performance of executives to insure compliance with overall objectives of firm. May preside over board of directors.

Vice President-(D.O.T. 189.117-034) - Aids president in administering and formulating organization policies and supervises activities of one or more departments, such as purchasing, sales, manufacturing, engineering, or finance. Participates in formulating company policies and assists in developing long-range plans. Coordinates programs in departments as approved by President or board of directors to attain company's goals. Confers with President to discuss analyses of activities, costs, budgets, and forecasts to determine changes needed for attaining company goals. May be responsible for current information on legislation related to operations and for action to secure favorable legislation. May perform duties of President during absence. May serve as member of management committees.

Manager, Industrial Organization - (D.O.T. 189.117-022) - General Manager, Industrial Organization Manager, General Manager, Plant Superintendent. Determines and executes administrative policies through subordinate managers. Coordinates activities of departments, such as production, distribution, engineering, maintenance, personnel, and selling. Plans and directs marketing of product to develop new markets and maintain sales volume and competitive position in industry. Plans and develops personnel program to maintain efficient staffing of organization. Reviews and alters programs in areas, such as purchasing, accounting, cost, research and development, and budget allocations, to ensure profitable operation of divisions. Represents organization in industry and manufacturing associations to develop acceptance for organization.

Manager, Personnel-(D.O.T. 166.117-018) - Plans and carries out policies relating to all phases of personnel activities. Organizes recruitment, selection, and training procedures, and directs activities of subordinates directly concerned. Confers with company and union officials to establish pension and insurance plans, worker's compensation policies, and similar functions. Establishes social, recreational, and educational activities. Studies personnel records for information, such as educational background, work record, and supervisor's reports, to determine personnel suitable for promotions and transfers. May represent company in negotiating wage agreements with labor representatives. May act as liaison between management and labor within organization. Also, see Labor Relations Manager (D.O.T. 166.167-034).

SCIENTISTS

Chemist-(D.O.T. 022.061-010) - Conducts research to develop or improve techniques, methodology, and procedures. Carries out analyses of organic and inorganic compounds to determine chemical and physical composition and properties. Devises new equipment, and develops formulas, processes, and techniques for solution of technical problems.

Physicist-(D.O.T. 023.061-014) - Conducts research into phases of physical phenomena, develops theories and laws on basis of observation and experiments, and devises methods to apply laws and theories of physics to industry, medicine, and other fields. Performs experiments with masers, lasers, cyclotrons, betatrons, telescopes, mass spectrometers, electron microscopes, and other equipment to observe structure and properties of matter, transformation and propagation of energy, relationships between matter and energy, and other physical phenomena. Describes and expresses observations and conclusions in mathematical terms. Devises procedures for physical testing of materials. Conducts instrumental analyses to determine physical properties of materials. May apply methodology of physics to a particular physical property or phenomenon.

ENGINEERS

Electrical Engineer, Power - (D.O.T. 003.061-010) - Plans construction and coordinates operation of power stations, transmission lines, and distribution systems. Plans layout of generating plants and distribution lines, prepares drawings, and specifies type of equipment and materials to be used. Estimates labor, material, and construction costs. Plans equipment installation and inspects completed work for efficient operation and compliance with specifications and safety standards. Computes power rates and assists others in evaluating properties and developing utility systems in new territories.

Industrial Engineer - (D.O.T. 012.167-030) - Performs a variety of engineering work in planning and overseeing utilization of production facilities and personnel in department or other subdivision of industrial establishment. Plans equipment layout, work flow, and accident reports. May prepare recommendations for reorganization of units and job duties to increase efficiency and eliminate excess processing steps and labor costs.

Ceramic Engineer - (D.O.T. 006.061-014) - Conducts research, designs machinery, develops processing techniques, and directs technical work concerned with manufacture of ceramic products. Directs testing of physical, chemical, and heat-resisting properties of materials, such as clays and silicas. Analyzes results of test to determine combinations of materials which will improve quality of products. Conducts research into methods of processing, forming, and firing of clays to develop new ceramic products, such as ceramic machine tools, refractories for space vehicles, and for use in glass and steel furnaces. Designs equipment and apparatus for forming, firing, and handling products. Coordinates testing activities of finished products for characteristics, such as texture, color, durability, glazing, and refractory properties. May specialize in one branch of ceramic production, such as brick, glass, crockery, tile, pipe, or refractories. May specialize in developing heat-resistant and corrosion-resistant materials for use in aerospace, electronics, and nuclear energy fields.

Mechanical Engineer - (D.O.T. 007.061-014) - Plans and designs mechanical or electro-mechanical products or systems, and directs and coordinates operation and repair activities. Designs products or systems, such as instruments, controls, engines, machines, and mechanical, thermal, hydraulic, or heat transfer systems, utilizing and applying knowledge of engineering principles.

Quality-Control Engineer - (D.O.T. 012.167-054) - Plans and directs activities concerned with development, application, and maintenance of quality standards for processing materials into partially finished or finished material or product. Develops and initiates methods and procedures for inspection, testing, and evaluation. Devises sampling procedures, designs forms for recording, evaluating, and reporting quality and reliability data, and writes instructions on use of forms. Establishes program to evaluate precision and accuracy of production and processing equipment and testing, measurement, and analytical facilities.

Nuclear Engineer - (D.O.T. 015.061-014) - Conducts research into problems of nuclear energy systems; designs and develops nuclear equipment; and monitors testing, operation, and maintenance of nuclear reactors. Plans and conducts nuclear research to discover facts or to test, prove, or modify known nuclear theories concerning release, control, and utilization of nuclear energy. Evaluates finding to develop new concepts of thermonuclear analysis and new uses of radioactive processes. Plans, designs, and develops nuclear equipment such as reactor cores, radiation shielding, and associated instrumentation and control mechanisms. Studies nuclear fuel cycle to define most economical uses of nuclear material and safest means of waste products disposal. Monitors nuclear tests and examines operations of facilities which process or utilize radioactive or fissionable material, to ensure efficient functioning and performance with safety specifications, regulations, and laws. Prepares technical reports, utilizing knowledge obtained during research and development activities and inspectional functions. May direct operating maintenance activities of operational nuclear facility.

Safety Engineer - (D.O.T. 012.061-014) - Develops and implements safety program to prevent or correct unsafe environmental working conditions, utilizing knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws. Examines plans and specifications for new machinery and equipment to ascertain if all safety precautions have been included. Determines amount of weight that can be placed on plant floor with safety. Inspects machinery to determine places where danger of injury exists. Designs, builds, and installs, or directs installation of guards on machinery, belts, and conveyors. Inspects premises for fire hazards and adequacy of fire protection and inspects fire fighting equipment. Studies each accident to minimize recurrence. Educates workers to dangers existing in plant through safety-first campaign. May conduct safety and first-aid classes or train first-aid instructors.

Drafter - (D.O.T. 017.161 through 281. series) - Translates the ideas, rough sketches, specifications, and calculations of engineers, architects, and designers into working plans which are used in making a product. Drafters may calculate the strength, reliability, and cost of materials. See also Construction Cluster.

TECHNICIANS

Mathematical Technician - (D.O.T. 020.162-010) - Data-Reduction Technician; Engineering Analyst; Technical Analyst. Applies standardized mathematical formulas, principles, and methodology to technological problems in engineering and physical science in relation to specific industrial and research objectives, processes, equipments, and products. Confers with professional, scientific, and engineering personnel to determine problems, such as determining functional feasibility of design proposals for electronic computer circuitry, analyzing effects of structural stress and deflection on missile performance, or establishing correlations between temperatures and other variables. Selects most practical and accurate combination and sequence of computational methods, including algebra, trigonometry, geometry, vector analysis, and calculus to reduce raw data to meaningful and manageable terms consistent with reliable combination of manual, mechanical, and electronic data processing.

Electronics Tester - (D.O.T. 726.281-014) - Test technician; quality-control-assembly-test technician. Performs a variety of electronic, mechanical, and electro-mechanical tests on electronic systems, subassemblies, and parts to ensure unit functions according to specifications or to determine cause of unit failure. May operate x-ray equipment to verify internal assembly and alignment of parts according to specifications.

SKILLED WORKERS

Tool Designer - (D.O.T. 007.061-026) - Development Mechanic; General and Special Tools Investigator and Planner; Machine Tool and Die Technician; Tool and Equipment Design Specialist. Designs broaches, milling machine cutters, drills, and other single- or multiple-edged cutting tools, and related jigs, dies, and fixtures for production or experimental use in metal working machines. Applies algebraic and geometric formulas and standard tool engineering data to develop tool configuration. Selects standard items such as bushings and tool bits for incorporation into tool design. Draws preliminary sketches and prepares layout and detailed drawings. Modifies tool designs according to trial or production service data to improve tool life or performance.

Die Maker - (D.O.T. 601.281-010) - Lays out, machines, fits, assembles and finishes castings and parts. Makes and repairs stamping dies, analyzing specifications and applying knowledge of die design and construction. May operate power press, perform final shaping and smoothing operations on die in-press.

Tool Maker - (D.O.T. 601.280-042) - Analyzes a variety of specifications; lays out metal stock. Sets up and operates machine tools. Fits and assembles parts to make or repair cutting tools, jigs, fixtures, gages, or machines using hand tools. Applies knowledge of tool design, shop mathematics, metal properties, and layout machining and assembly procedures.

Machinist - (D.O.T. 600.280-022) - Includes Machinist, All-Around; Machinist, First Class; Machinist, General; Journeyman Machinist, Precision. Sets up and operates machines to work metals from crude stock into precision parts used in many industries. May develop specifications for general description and draw and sketch products to be made. May be required to have experience with particular products, machines, or function as construction or repair, and be designated accordingly. Differs from Tool Maker primarily in wider range of products made.

Pattern Maker, Plastics - (D.O.T. 754.381-014) - Jig and Form Maker; Plug Maker. Fabricates patterns, fixtures, jigs, and templates used in producing plastic articles, from wood or metal stock following blueprints and using hand tools, power tools, and measuring instruments. Lays out cutting lines on stock, using scribe, compass, rule, triangles, and French curves. Cuts stock, using power saw, power shear, and hand tools. Assembles pieces using rivets, bolts, nails, or glue. Smoothes surface of assembly, using plane and power sander. Verifies dimensions of assembly with calipers, rule, and compass. Sprays coat of parting agent, such as sealing lacquer or wax on surface of assembly.

SEMI-SKILLED WORKERS

Hammer Mill Operator - (D.O.T. 515.687-010) - Prepares iron and steel machine tool cuttings for use in making ferro-silicon by selecting scraps of desired thickness and breaking them up in hammer mill.

Kiln Operator - (D.O.T. 509.565-010) - Tends battery of rotary kilns that heat minerals such as lime, chrome, ore, and manganese preparatory to mixing them with molten metal to form steel.

Grinding Mill Operator - (D.O.T. 515.382-010) - Operates panel board to control machinery and equipment such as conveyor belts, vibrating feeders, distributors, and pumps to grind ore and to separate iron particles from gangue.

Batch Maker - (D.O.T. 515.685-010) - Tends equipment that mills and recovers powdered metal used in powder metallurgy.

Boring Machine Operator - (D.O.T. 606.682-010) - Sets up and operates one or more boring machines to bore, drill, mill, or ream metal parts according to specifications and knowledge of boring procedures.

Coiler Operator - (D.O.T. 613.382-010) - Operates equipment to wind steel strip into coils as strip emerges from rolling mill.

Table Operator - (D.O.T. 613.682-026) - Operates traveling and stationary tables to feed steel blooms, billets, and slabs to rolls for successive passes through roll stands.

Core-Maker, Pipe - (D.O.T. 518.684-014) - Makes clay cones around which ferrous and non-ferrous pipe is cast.

Plater, Electroplater - (D.O.T. 500.380-010) - Sets up and controls plating equipment to coat metal objects electrically with chromium, copper, cadmium, or other metals to provide protective or decorative surface or to build up worn surface. Related jobs are Plater, Brass; Bronze; Cadmium; Chromium; and Copper.

Digester Operator - (D.O.T. 532.362-010) - Operates battery of stationary or rotary steam digesters to cook wood chips for paper manufacturing.

UNSKILLED LABORER

Laborer, Electroplate - (D.O.T. 500.686-010) - Assists Plater or works in standardized production operations.

Batter-Mixer-(D.O.T. 520.685-014)-Tends machine that mixes ingredients that produce batter for cakes and other bakery products.

Bench Grinder -(D.O.T. 705.684-010) - Moves metal objects, such as castings, billets, machine parts, and sheet metal sub-assemblies against abrasive wheel of bench grinder to grind, or rough finish objects to specification.

Clay Roaster - (D.O.T. 573.685-014) - Tends clay roasting kilns and auxiliary equipment in which clay, used as filter in treating oil, is cleaned and treated for reuse.

Cotton Roll Packer - (D.O.T. 920.685-054) - Tends machine that packs absorbent surgical cotton rolls in cardboard cartons for shipment. Places empty shipping cartons on conveyor rollers. Pushes button to start automatic cotton layer machine that rolls absorbent cotton between paper. Inserts rolled cotton into cardboard container. Fills shipping cartons with containers and places glued paper tape on top to seal cartons.

Core Extruder - (D.O.T. 557.685-010) - Tends manually operated extrusion press and wire cutter to extrude and cut paste (black mix) to form dry cell battery cores.

Bindery Worker - (D.O.T. 653.685-010) - Tends various binding machines to perform duties involved in binding books, magazines, pamphlets, directories, and catalogs.

UNIT XII

MANUFACTURING

ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 15 occupations listed below in the Word Find. Look across, down, diagonally, and backwards.

```
D A F I A C F R O T A R E P O N L I K Z
I B M A C H I N I S T G E N A M E T B R
G C E R A M I C E N G I N E E R R L E T
E G C R F I C E N S Q P O T I A S T N O
S R C D E C M P E T A L A L M E S R C O
T I M N O F N O R F R D O T H E E T H L
E N Q U A R G R Y K E R W O T R E A G D
R D O N T R O L C F T M A S S I E A R E
O I B E N C H G R N D E C C A O U M I S
P N C Y T I L A O Q R I E C R O N N N I
E G D R A F T C R E N I A H I T M N D G
R M F R A R Y E K O D M K R E L M A E N
A I M N O T P A R R D C Z W Z E I M R E
T L E D I C M T L T P R E D S I D T E R
O L R L F E C C P M A N A R G E R T T R
R R A C I E A C N E O N M T L R S J F E
I U M D L H T S P R E S I D E N T R A K
Q C H E M I S T N T D S I R M E L K R A
M A T H E M A T I C A L T E C H I N D E
R G R E E N I G N E L A I R T S U D N I
```

President
Die maker
Kiln operator
Digester operator
Mathematical tech.
Electronics tester
Tool designer
Chemist

Machinist
Industrial engineer
Ceramic engineer
Quality-control (engineer)*
Bench grinder
Grinding mill (operator)*
Drafter

*Words in parentheses will not be found in the Word Find.

UNIT XII

MANUFACTURING

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B. Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C. Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D. Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E. Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Manufacturing cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT XII

MANUFACTURING

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. In order to acquaint students with those occupations involved in Manufacturing, have the students form an assembly line to make a specific product (**choose from the sample products on the following pages**).

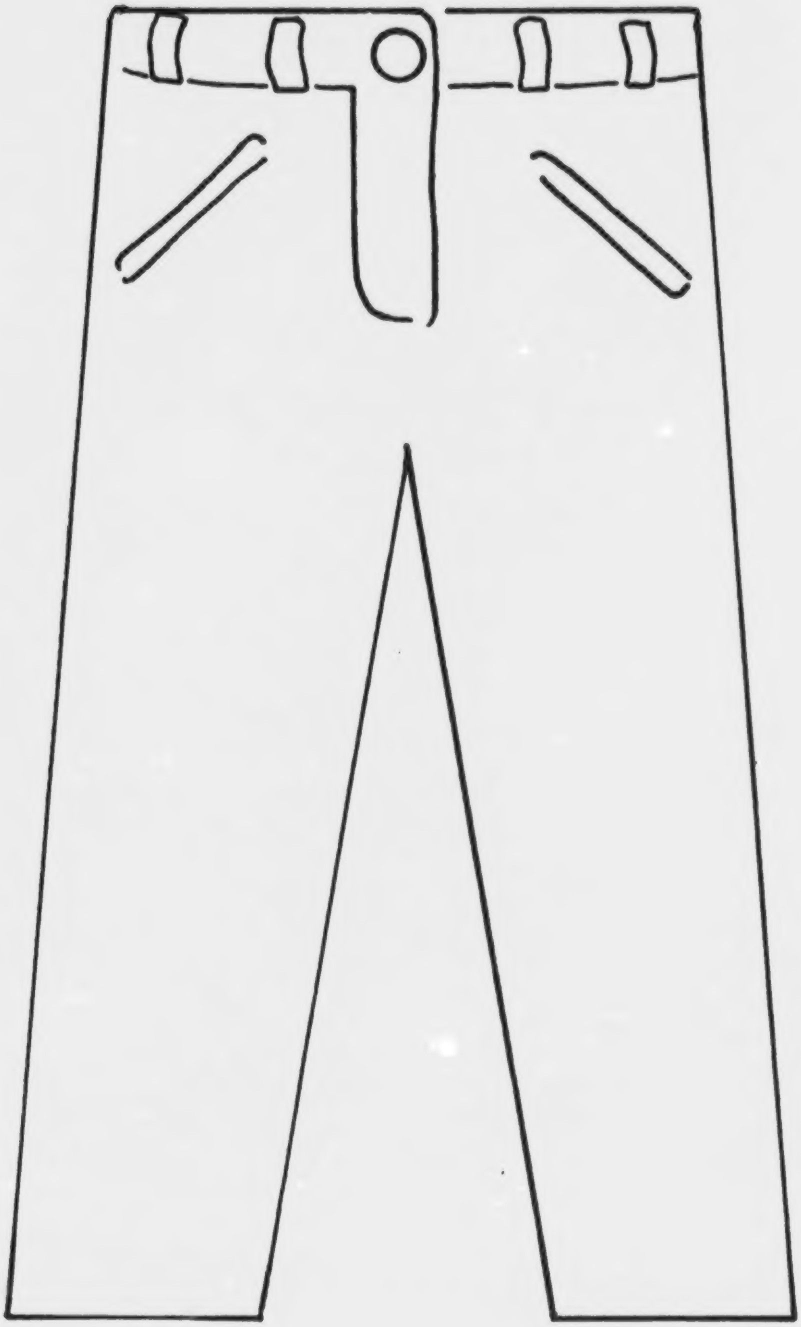
Materials needed for activity:

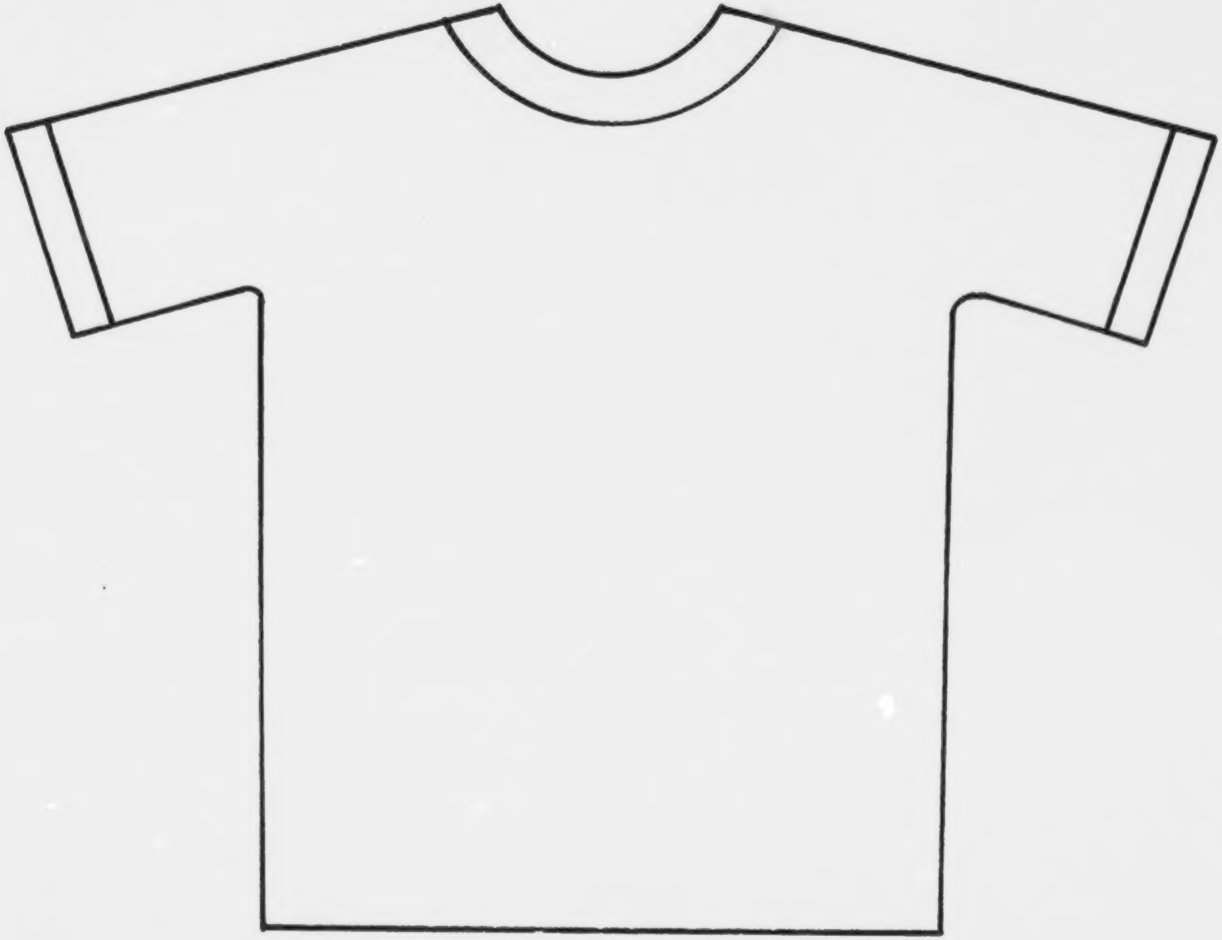
Dowels
Butcher paper
Long table (or tables depending on the size of class)
Glue
Scissors
Felt pens
Paper (for product)
Cardboard (for patterns)
Other items used to decorate product

1. Assign students the following occupations:

Manager:	Coordinates activities of the assembly line.
Industrial Engineer:	Plans equipment layout and work flow.
Quality-Control:	Checks product for errors, imperfections.
Safety Engineer:	Develops and implements safety program to prevent or correct unsafe working conditions.
Pattern Maker:	Takes product design and traces it on cardboard to make pattern.
Production Engineer :	Develops work measurement procedures and directs time-and-motion study. Informs regulator of speed adjustment of conveyor belt.
Regulator(s):	Moves dowels to adjust speed of conveyor belt.
Cutters:	Cuts out pieces.
Drafter:	Traces around cardboard pattern to create product.

Gluers:	Glues items used to decorate product to paper.
Designers:	Puts designs on product using felt-tip pens.





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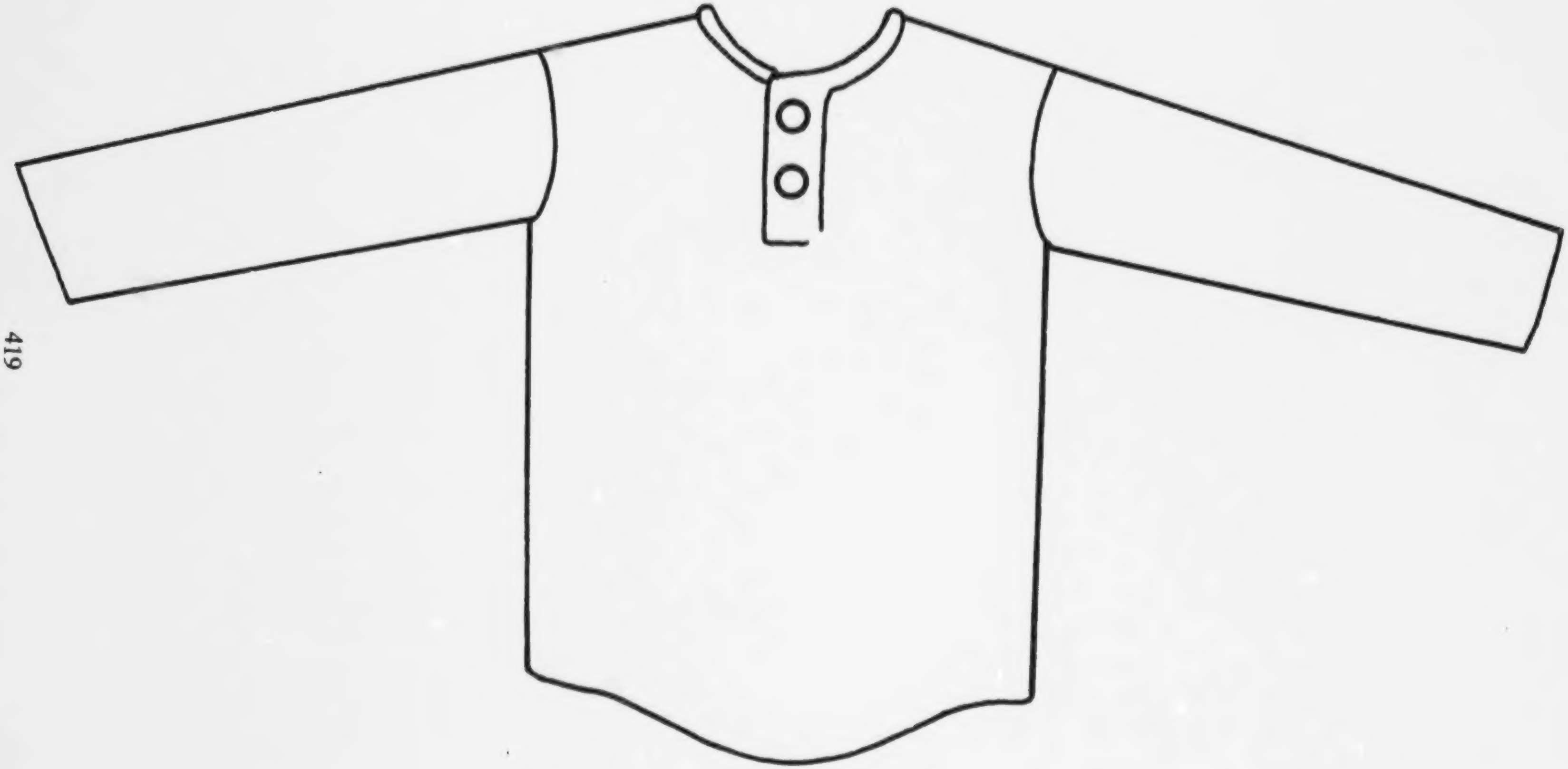

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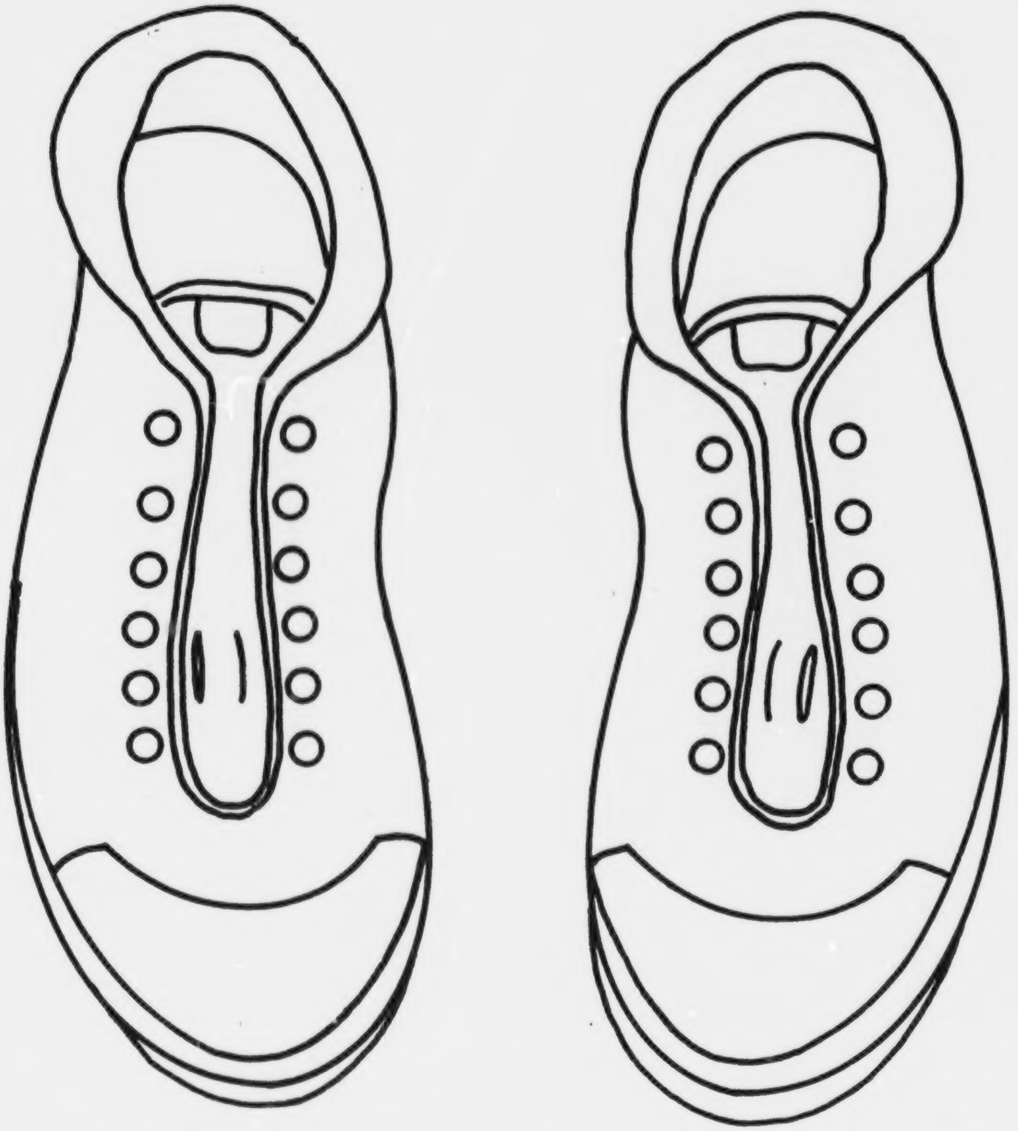
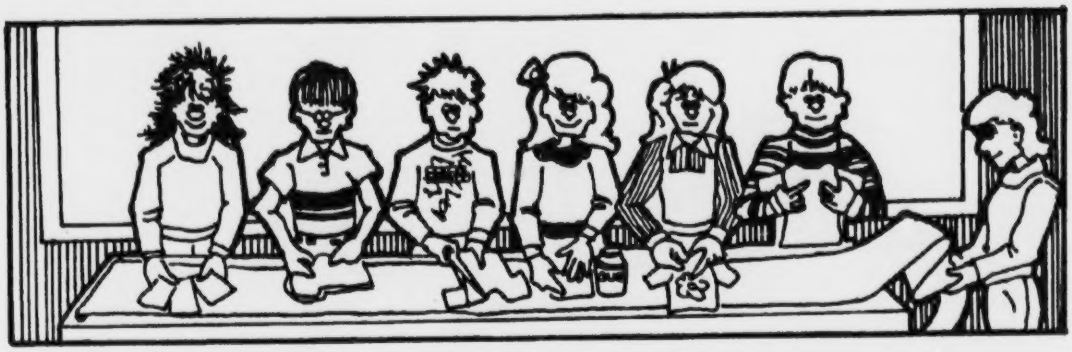


2. Attach butcher paper to dowels and place on table.



3. Have the students "manufacture" a product. Set a certain number of products to be completed and have the students carry out the work tasks of their assigned occupations.

   (**NOTE:** Students should agree on the design of the product to avoid confusion.)

4. After the demonstration of the manufacturing process, have the students answer the following questions:

   a. Why is an assembly line used for mass production of a product?

   b. Would you enjoy working on an assembly line? Why or why not?

   c. Describe any problems you encountered in your occupation.

   d. What special traits should a worker who works on an assembly line possess?

   e. What are the advantages of working on an assembly line?

B. Explain to the students that the manufacturing of a product occurs because the consumer wishes to purchase it. Many new items are invented and manufactured every year. Have the students invent a product for manufacturing. Explain that the product may be practical or imaginary, based on existing products, or based on what they feel the consumer would purchase. The requirement for the invention is that they must either be able to draw it or to construct a facsimile. Some students may wish to complete their inventions at home. After sufficient time has been allowed for preparation, ask each student to share his/her invention with the class. Discuss the occupations that would be involved in the manufacturing of each invention.

UNIT XII

MANUFACTURING
UNIT TEST

A. Name five occupations in the Manufacturing cluster.

1.

2.

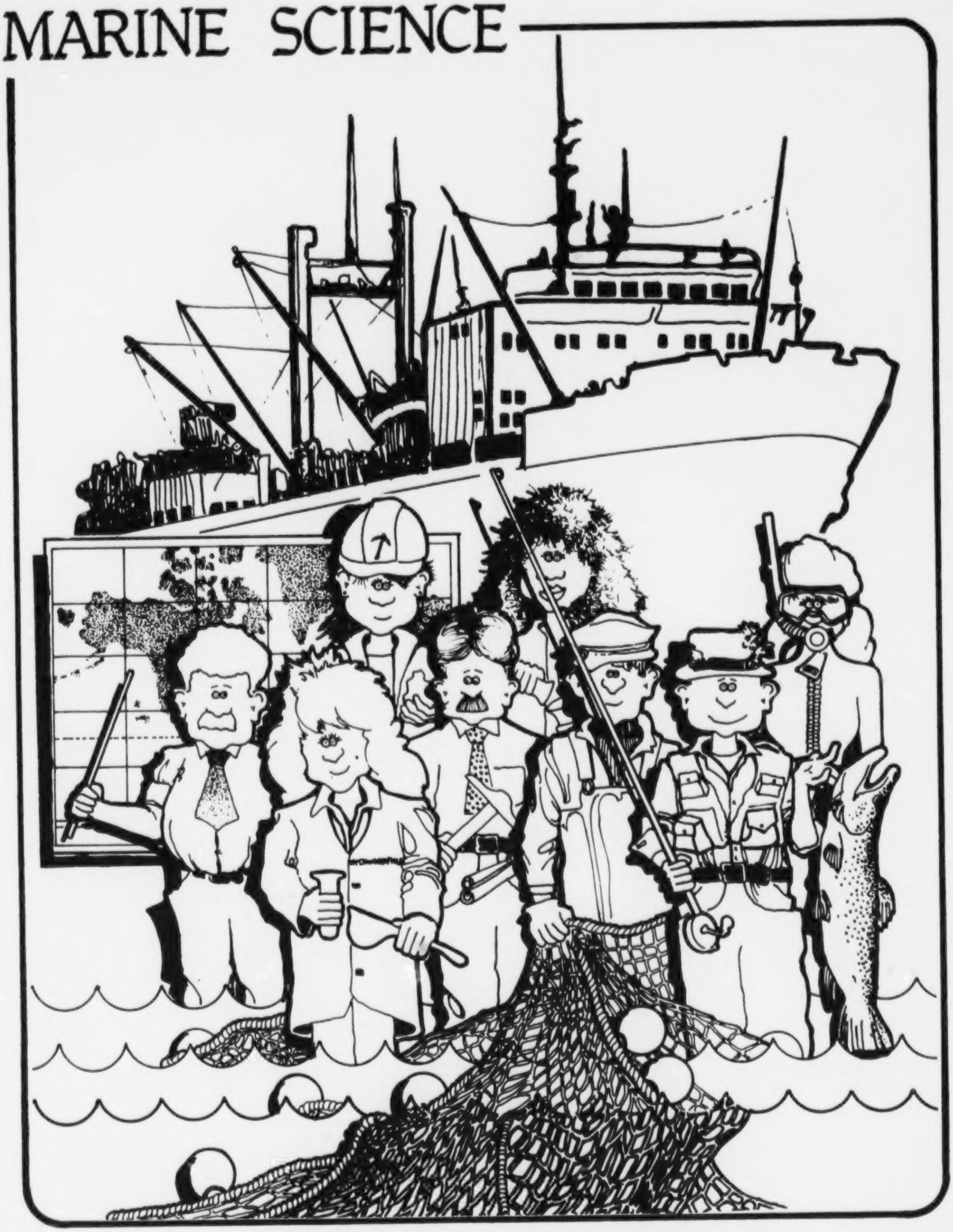
3.

4.

5.

B. Discuss an occupation found in the Manufacturing cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

MARINE SCIENCE



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UNIT XIII

MARINE SCIENCE
INFORMATION SHEET

I. What Is the Marine Science Cluster?

   A. It is a group of occupations involved in the discovery and cultivation of food and minerals from oceans, lakes, and rivers.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Research**—occupations involved in the exploration and study of the marine environment

   B. **Chemical and Mineral Extraction**—occupations involved in locating and obtaining minerals and chemicals from the ocean floor

   C. **Off-Shore Drilling**—occupations involved in locating and securing petroleum (oil and gas) products from the ocean floor

   D. **Fishing**—occupations involved in harvesting fish and marine produce

   E. **Aquaculture**—occupations involved in cultivating marine life in controlled environment

   F. **Marine Engineering and Technology**—occupations involved in the design, construction, and operation of marine vessels (ships) and instruments

   G. **Surface and On-Shore Support**—occupations involved in supporting or assisting with marine science activities

III. Examples of Occupations

RESEARCH

Aquatic Biologist - (D.O.T. 041.061-022) - Studies aquatic plants and animals and the environmental conditions that affect them. Investigates the environmental changes and ocean depths to determine the different forms of plant and animal life that exist at various levels. Studies various types of marine life and the food-chain relationships. An aquatic biologist may specialize in a variety of areas. A limnologist is a biologist who specializes in fresh-water aquatic life. A marine biologist specializes in salt-water life. An ichthyologist specializes in the study of fish. A marine botanist specializes in aquatic plant life. A marine zoologist specializes in aquatic animal life. A marine ecologist studies the environmental conditions and changes which affect the aquatic and estuaric life-chain and balance.

Marine Geophysicist - (D.O.T. 024.061-030) - Studies the physical aspects of the oceans such as density, temperature, and ability to transmit light and sound. Investigates seismic, gravitational, thermal, and magnetic forces which affect ocean movement and properties. Investigates and charts the flow patterns of tides and currents of the ocean. Studies the relationship between the sea and the atmosphere. Analyzes and compiles data concerning the ocean floor. Compiles data to prepare navigational charts and maps.

Marine Geologist - (D.O.T. 024.061-018) - Studies the composition, structure, and history of rocks and sediment on the ocean floor. Helps locate mineral, petroleum, and gas deposits under the ocean floor. Applies geological knowledge to engineering problems encountered in construction projects such as dams and underwater tunnels. Prepares reports that analyze and summarize geological exploration for scientific and industrial use.

Marine Meteorologist - (D.O.T. 025.062-010) - Studies the interaction of the atmosphere and the ocean and the process by which weather over the ocean is generated. Compiles and analyzes weather data gathered from satellites, radar, and sensor-bearing balloons. Prepares a variety of weather forecasts for general public use and for specialized groups such as pilots, mariners, and farmers. May serve at an on-shore weather station or aboard an ocean-going vessel.

Hydrographer - (D.O.T. 025.264-010) - Measures rainfall and riverflow at metering stations. Takes water samples for analysis and prepares reports of hydrographic data. Measures rate of waterflow at various depths with measuring devices. Records depth and flow readings taken at various locations. Prepares graphs and charts to show trend in waterflow pattern at metering stations.

Hydrologist - (D.O.T. 024.061.034) - Studies distribution, disposition, and development of waters in land areas. Studies the form and intensity of precipitation and modes of return to the ocean and atmosphere. Charts the waterflow and disposition of sediment. Measures changes in water volume due to evaporation and melting snow. Studies storm occurrences and also nature and movement of glaciers. Determines rate of ground absorption and ultimate disposition of water. Evaluates data obtained concerning such problems as flood and drought forecasting and soil and water conservation programs. Helps plan water supplies, water power, flood control, drainage, irrigation, crop production, and inland navigation projects.

CHEMICAL AND MINERAL EXTRACTION

Although the occupations listed below are generally considered to be classified in the Agri-Business and Natural Resources cluster, the work tasks, when dealing with locating and obtaining minerals and chemicals from the ocean floor, differ enough to be classified in the Marine Science cluster also.

Mining Engineer - (D.O.T. 010.061-014) - Determines location and plans extraction of coal, metallic ores, nonmetallic minerals, and building materials, such as stone or gravel. Determines most effective and economical method or combination of methods of extraction according to depth of overburden and character of deposit and surrounding strata. Plans location and development of shafts, tunnels, and chambers. Plans height and placement of excavation benches (levels) and type and capacity of excavation and haulage equipment, such as power shovels and trucks for open pit or strip mining. Devises methods and locations for storing and replacing excavated soils to reclaim mining sites. Lays out and directs construction and operation of access roads, water, power supply, drainage, ventilation, rail and conveyor systems, and materials separating, cleaning, grading, and reducing facilities. Plans and coordinates utilization of manpower and equipment consistent with efficiency and safety. May apply knowledge of mining engineering to solve problems concerned with environment (ENVIRONMENTAL ENGINEER).

Metallurgical Technician - (D.O.T. 011.261-010) - Examines and tests metal samples to determine their physical properties, under direction of METALLOGRAPHER (profess. & kin.). Conducts routine microscopic examinations of metals and alloys to determine their crystal structure, porosity, homogeneity, and other characteristics. Polishes or etches metal specimens and photographs samples, using photomicroscope, or directs photography technical personnel to take, develop, and mount photomicrographs. Examines metal and alloy samples with X-ray, gamma-ray, and magnetic-flux equipment to detect internal fractures, impurities, and similar defects in metals. Tests samples in pressure devices, hot-acid baths, and other apparatus to determine strength, hardness, elasticity, toughness, or other properties of metal.

Extractive Metallurgist - (D.O.T. 011.061-018) - Originates, controls, and develops flotation, smelting, electrolytic, and other processes used in mining metals from their ores, for producing iron and steel, or for refining gold, silver, zinc, copper, and other metals. Studies ore reduction problems to determine most efficient methods of producing metals commercially. Controls temperature adjustments, charge mixtures, and other variables in blast-furnace operations and steel-melting furnaces to obtain pig iron and steel of specified metallurgical characteristics and qualities. Investigates methods of improving metallurgical processes, as in the reduction of alumina by electrolytic methods to produce aluminum, the distillation of molten ore to purify zinc, or selective oxidation methods to extract lead, nickel, mercury, and other nonferrous metals from their ores.

Mineralogist - (D.O.T. 024.061-038) - Examines, analyzes, and classifies minerals, gems, and precious stones. Isolates specimen from ore, rocks, or matrices. Makes microscopic examination to determine shape, surface markings, and other physical characteristics. Performs physical and chemical tests and makes X-ray examinations to determine composition of specimen and type of crystalline structure. Identifies and classifies samples. Develops data and theories on mode of origin, occurrence, and possible uses of minerals.

OFF-SHORE DRILLING

Petroleum Geologist - (D.O.T. 024.061-022) - Explores and charts stratigraphic arrangement and structure of earth to locate gas and oil deposits. Studies well logs, analyzes cores and cuttings from well drillings, and interprets data obtained by electrical or radioactive well logging and other subsurface surveys to identify earth strata. Examines aerial photographs, evaluates results of geophysical prospecting, and prepares surface and subsurface maps and diagrams depicting stratigraphic arrangement and composition of earth and probable deposits of gas and oil. Recommends acquisition, retention, or release of property leases or contracts. Estimates oil reserves in proven or prospective fields, and consults with petroleum engineers concerning drilling and production methods. May direct drilling of shallow exploratory wells.

Driller Helper - (D.O.T. 930.684-026) - Assists rotary driller in operating machinery to drill oil or gas wells, using handtools and power tongs and wrenches. Assembles and disassembles casings and pipe sections, using hand and power wrenches and tongs. Sets curved metal wedges around pipe string at wellhead to prevent string from falling into well during change or addition of pipe sections. Tightens or loosens threaded joints between sections, using tongs or chain wrenches. Guides lower end of pipe sections to or from well opening. Loosens or tightens joints, using cathead (winch). Mixes drilling mud (clay and sand slush), using power agitators. Reads gage to ascertain pressure on drilling tools at bottom of well and reports irregularities to rotary driller. Repairs drilling machinery, slush pumps, and derricks. Digs drainage ditches, racks tools, and cleans drilling floor around rig. May assist in erecting and dismantling rigs. Performs other duties as described under helper. May be known according to specific duty performed as back-up worker; cathead worker; lead-tong worker; pipe racker.

Driller - (D.O.T. 930.382-018) - Operates portable rotary rig to drill shallow boreholes to obtain samples of earth formations for placement of explosives in seismic prospecting or for other tests to discover petroleum. Positions truck-mounted derrick at drilling area specified on field map. Starts rig and moves throttles and clutches to raise and lower drilling pipes. Counts sections of drill rod to determine depth of borehole. Selects coring bit and barrel. Withdraws core barrel from hole and extracts core from barrel. Records depths at which samples were taken. Repairs equipment, using handtools.

Drilling Inspector - (D.O.T. 930.167-010) - Charts pressure, temperature, and other characteristics of oil and gas well boreholes or producing wells, using special subsurface instruments, and interprets findings for use in determining further drilling or producing procedures. Directs workers in assembling wire line hoisting gear and attaching line to instruments. Gives directions to hoist operator to lower clinograph into well to determine variation of well from vertical (instrument records variation on chart). Informs rotary driller of variation from vertical. Lowers weighted wire into well and reads depth of well from recording wheel. Lowers depth bomb into well that records pressure at various depths to determine rate of natural flow of oil from well. Lowers thermometers and other instruments with accompanying recording devices through tubing, casing, drill pipe, or open borehole. Raises instruments from well and removes chart recordings. Measures, converts, records, and interprets data for use by engineering personnel and management in determining drilling or production procedures. May calibrate recording devices. May repair and maintain instruments. May be designated according to specialty as bottom-hole-pressure-recording operator.

Petroleum Engineer - (D.O.T. 010.061-018) - Analyzes technical and cost factors to plan methods to recover maximum oil and gas in oil-field operations, utilizing knowledge of petroleum engineering and related technologies. Examines map of subsurface oil and gas reservoir locations to recommend placement of wells to maximize economical production from reservoir. Evaluates probable well production rate during natural or stimulated-flow production phases. Recommends supplementary processes to enhance recovery involving stimulation of flow by use of processes, such as pressurizing or heating in subsurface regions. Analyzes recommendations of reservoir engineering specialist for placement of well in oil field. Develops well drilling plan for management approval, specifying factors including drilling time, number of special operations, such as directional drilling, and testing, and material requirements and costs including well casing and drilling muds.

FISHING

Clam Dredge Operator - (D.O.T. 446.663-010) - Sets up and operates hydraulic clam dredge aboard a barge or ship to harvest clams at low tides. Lowers dredge into water using hoisting boom and winch, and starts pumps that force water through jets to loosen sea bottom and facilitate dredging operations. Manipulates levers to open and close dredge basket or to drag the basket along the bottom of the water, forcing the clams into wire baskets. Hoists dredge basket with hoisting boom and winch and dumps contents onto deck or conveyor belt. Removes marketable clams from contents dumped from dredge basket and deposits them in containers for shipping. Assisted by a clam dredge operator helper, adjusts, repairs, and maintains dredge and conveyor equipment. Dredge may be designated by species of marine life that is being sought.

Fisher, Line - (D.O.T. 442.684-010) - Catches marine life with hooks and line called a trot, trawl, or troll line. Fishes for fish from land or from vessel. Lays out line and attaches hooks, bait, sinkers, and various anchors, floats, and swivels, depending on quarry sought. Chops bait and attaches it to hooks. Lays lines in tubs in such a manner that they can be thrown out without fouling. Attaches end of set line to buoy or on board and throws out line from position on vessel. Secures other end to anchor. Returns to lines after designated period and hauls catch aboard boat or on land.

Fisher, Spear - (D.O.T. 443.684-010) - Catches fish such as eels, salmon, and swordfish, using barbed spear or harpoon. Spears fish from platform built in stream or on river bank, or from platform on fishing vessel. Uses spear or harpoon attached to rope. Hoists fish from water, using gaff. Kills swordfish with club, rifle, or gaff. May be designated harpooner according to quarry sought.

Sponge Clipper - (D.O.T. 447.687-026) - Gathers sponges from sea bottom, using pronged hook attached to end of pole, wading, or using boat. Tears sponges from their base with hook, or knife, and places them in a bag to be pulled to the surface or onto a vessel.

Fish Icer - (D.O.T. 922.687-046) - Weighs out dressed fish. Records weights and packs fish in ice. Reads orders to determine quantity, size, and variety of fish to be packed. Selects fish, weighs them, and prepares them for shipment. Shovels layer of ice in box and fills body cavity of each fish with ice. Places fish in box and fills remainder of box with ice. May assemble boxes, stencil addresses on them, and band the packed boxes with metal straps.

Seal Killer - (D.O.T. 461.684-010) - Captures seals for commercial uses by using club, rifle, harpoon, or trap. Kills seals for pelts, using clubs. Rounds up bachelor seals, using pole to prod them and keep them together. Drives male seals inland to killing grounds and sorts droves into small groups. Kills male seals that are within specified age and size limits by striking them with club. Severs skin around head and flippers of dead seal, using knife. Pins seal's skull to ground with metal bar and pulls off seal pelt from head to tail. Loads pelts into trucks for transportation to plant for cleaning and curing. At plant site, washes pelts in sea water, scrapes fat and blubber from pelts, using hand scraper. Cures pelts in salt or brine, sprinkles boric acid on skin side of pelt to prevent bacterial development and packs and salts pelts in barrels for shipment. May be designated according to tasks performed. Sealing operations are controlled by U.S. Fish and Wildlife Service.

Shellfish Shucker - (D.O.T. 521.687-122) - Shucks fresh or steamed shellfish such as oysters, clams, or scallops, preparatory for canning, freezing, or fresh packing. Holds shellfish firmly or against block and forces shucking knife between halves of shell and hinge juncture. Twists knife to sever muscles holding shell closed, and pries open. Cuts shellfish from shell, flips it into containers and discards shell. May break edges of shells before shucking, using hatchet. May be designated according to shellfish shucked.

Fish Cleaner - (D.O.T. 525.684-030) - May be called a Fish Dresser, Fish Butcher, Fish Cutter, Fillet Cutter, Fish Scaler, Fish Splitter, or any variety of jobs related to the cleaning and butchering of fish for processing. Cleans fish aboard ship or ashore, performing any combination of tasks, alone or as a member of crew. Duties may include: scraping scales from fish with knife, cutting or ripping fish from vent to throat with knife and tearing out viscera and gills, cutting off head of fish with knife, dropping head in tub and sliding fish along table to next worker.

AQUACULTURE

Fishery Bacteriologist - (D.O.T. 041.061-058) - Conducts laboratory research and experiments to discover ways to control bacteria and other micro-organisms harmful to fish. Analyzes samples of water from streams, lakes, and other watercourses to detect presence of harmful microorganisms, using microscope, centrifuge, and other laboratory equipment. Studies biology, ecology, physiology, and morphology of microorganisms identified with diseases of fish. Ascertains effectiveness of chemical and bacteria which are destructive to harmful microorganisms but not toxic to finfish or shellfish.

Fish Culturist - (D.O.T. 180.167-030) - May be designated as Fish-Hatchery Superintendent, Supervisor, or Pisciculturist. Supervises and coordinates activities of workers engaged in cultivating fish for use in stocking streams and ponds.

Fish Farmer - (D.O.T. 446.161-010) - Raises finfish such as trout, catfish, and salmon in stock ponds. In a privately owned fish farm, the fish farmer may supervise the slaughtering, butchering, processing, and marketing of the fish.

Shellfish Grower - (D.O.T. 446.161-014) - Cultivates and harvests beds of shellfish as clams, oysters, and shrimp. Lays out and stakes tide flats (ground beneath shallow water near shoreline). Piles up stone, poles, and mud, using farm tractor and hand implements to make dikes to control water drainage at low tide. Removes debris by hand and levels soil by tractor and harrow. Sows spat (young shellfish) by hand or with shovel. Covers seeded area with mixture of sand and crushed shell. Rigs net or star mop (mop of heavy rope yarn) and drags it over bed behind power boat to entangle and remove shellfish predators. Walks about bed at low tide and scoops or digs shellfish from bed and piles them on barge or mud sled. Packs shellfish, according to market specifications, in containers and returns small ones to bed. May supervise workers who cultivate and harvest beds. May negotiate with buyers for sale of crop.

MARINE ENGINEERING AND TECHNOLOGY

Marine Architect - (D.O.T. 001.061-014) - Designs and oversees construction and repair of marine craft and floating structures such as ships, barges, tugs, dredges, submarines, floats, and buoys. Studies design proposals and specifications to establish basic characteristics of craft such as size, weight, speed, propulsion, armament, cargo, displacement, draft, crew and passenger compartments, and fresh or salt water service. Oversees construction and testing of prototype in model basin and develops sectional and waterline curves of hull and superstructure according to specification and test data. Designs layout of craft interior including cargo space, passenger compartments, ladder wells, and elevators. Confers with marine engineers to establish arrangement of boiler room equipment, propulsion machinery, ventilation systems, refrigeration equipment, piping, and other functional equipment.

Marine Engineer - (D.O.T. 014.061-014) - Designs and oversees construction of marine power plants, propulsion systems, heating and ventilation systems, and other mechanical and electrical equipment in ships docks, and marine facilities. Studies drawings and specifications and performs complex calculations to conceive equipment and systems designed to meet requirements of marine craft or facility. May specialize in design of equipment.

SCUBA Diver - (D.O.T. 379.384-010) - May be designated as Salvage Diver, Skin Diver. Performs various underwater jobs, wearing insulated suits and wearing pressure tanks containing air supply. Dons mask, flippers, and aqualung, or similar self-contained air supply as well as insulated suit if water is deep or cold. Swims from boat, dock, or shore, to job site. Dives to locate or recover submerged objects such as automobiles, boats, logs, bodies, or other objects. Swims to bottom and scans river bed or ocean bottom for objects sought. Attaches lines or chains around heavy objects and fastens to lowered hook. Picks up light-weight objects and swims to surface. May use safety line, and communicates with tender by jerking on line. May perform repair work on underwater installations. May engage in fire fighting activities.

Diver - (D.O.T. 899.261-010) - Works below surface of water with air line and communication lines to surface, to inspect, repair, remove, and install equipment structures. Descends in water with aid of Diver Help-er. Communicates with surface by signal line or telephone. Inspects docks, ship-bottoms and propellers. Makes minor repairs on vessels beneath waterline. Cuts and welds steel, using oxyacetylene cutting torch and arc-welding equipment. Cleans debris from intake and discharge strainers, water strainers, or ships. Remove obstructions from marine railways or launching ways. Levels rails by driving wedges beneath track with maul or sledge hammer. Removes launching cradles and sliding ways from keels of newly launched vessels, using power and hand tools. Places rigging around sunken objects and hooks rigging to crane line. Rigs explosives for underwater demolitions. Searches for lost, missing, or sunken objects, such as bodies, torpedoes, sunken vessels, and equipment. Places recording instruments below surface of water preparatory to underwater tests or experiments. May set sheet pilings for cofferdams. May drill holes in rock for blasting. May work in flooded mines.

Marine Engine Mechanic - (D.O.T. 623.281-026) - Installs and repairs gasoline and diesel engines in boats, yachts, tugs, and trawlers, following specifications. Installs engine controls, propeller shaft, and propeller. Attaches test instruments, starts engine, and records operating data, such as revolutions per minute and voltage output. Disassembles defective engines and repairs or replaces damaged parts.

Motorboat Mechanic - (D.O.T. 623.281-038) - Repairs and adjusts electrical and mechanical equipment of gasoline power motorboat engines, using handtools, powertools, and electrical testing meters. Starts motors and listens to sound to locate cause of trouble. Tests motor for conformance to manufacturer's specifications. Dismantles motors, using handtools, and examines parts for defects. Adjusts generator and replaces faulty wiring, using handtools and soldering iron. Installs piston rings, adjusts carburetor, grinds valves, repairs and replaces reduction gears and other parts. Using lathe, drill press, handtools, and powertools, examines and repairs defective propeller and propeller shafts. Aligns engine to propeller shaft. May repair only mechanical equipment of engines. May be designated according to type of engine such as Inboard Motorboat Mechanic, Outboard Motorboat Mechanic.

Motorboat Operator - (D.O.T. 911.663-010) - Operates motor-driven boat to carry passengers and freight, takes soundings in turning basin, serves as liaison between ships, ship and shore, harbor and beach area patrol, tows, pushes, or guides other boats, barges, logs, or rafts. Casts off securing lines and starts motor. Moves gear lever to place boat in forward or reverse motion, and steers boat with helm or tiller. Maintains equipment, such as range markers, fire extinguishers, boat fenders, lines, pumps, and lubricating parts. Cleans boat and repairs hull and superstructure, using handtools, paint, and brushes. May tune up, overhaul, or replace engine. May give direction for loading and seating in boat. May be designated according to type of boat operated such as Boat Tender, Charter-Boat Operator, Sight-Seeing Operator, Water-Taxi Driver; or may operate motor-driven boat to haul fish or other marine life from off-shore fishing vessel to buyer and be designated Run-Boat Operator.

SURFACE AND OFF-SHORE SUPPORT

Dockhand - (D.O.T. 891.684-010) - Performs flooding duties concerned with drydocking and cleaning exteriors of ships, as well as maintenance of drydock and piers. Positions keel blocks on dock platform and builds blocks as directed by Dockmaster, using handtools and clamps. Opens flood valves in floating drydock section to submerge platform. Takes up docking lines, using winch, or snubs lines over dock cleats to position ship over drydock. Starts pumps to remove water from drydock sections and turns pump controls to keep dock platform on even keel. Washes or steam-cleans exterior of ship's hull to remove marine growth and loose paint, using high-pressure water hose or steam-cleaning equipment. Scrapes barnacles or other marine growth from hull with long-handled scraper, and chips rust or paint from hull with pneumatic tool. Erects stages and scaffolds on drydock, when removing ship from dock, to keep dock platforms on even keel as they are submerged. Floods or drains caisson of graving drydock and assists floating caisson in or out of position across drydock entrance.

Laboratory Tester - (D.O.T. 029.261-010) - May be designated as Chemical Analyst; Chemist, Assistant; Laboratorian; Laboratory Sampler; Research-Laboratory Technician; Research Technician; Tester. Performs laboratory tests according to prescribed standards to determine chemical and physical characteristics or composition of solid, liquid, or gaseous materials, and substances for purposes such as quality control, process control, product development, or determining conformity to specifications. Sets up and adjusts laboratory apparatus, and operates grinders, agitators, centrifuges, ovens, condensers, and vibrating screens, to prepare material for testing according to established laboratory procedure. Performs physical tests on samples of raw materials and controls quality of materials and mix during manufacturing process. Tests raw materials. Tests dry and liquid substances used as ingredients for purity, viscosity, density, absorption or burning rate, melting point or flash point. Tests materials for presence and content of elements or substances such as hydrocarbons, manganese, natural grease, or impurities. Tests samples of manufactured products. Examines materials, using microscope. Records test results on standard forms, writes test reports describing procedure used, and prepares graphs and charts. Cleans and sterilizes laboratory formulas. May add chemicals or raw materials to process solutions or produce batches to correct deviations from specifications.

UNIT XIII

MARINE SCIENCE
ACTIVITY SHEET 1—UNSCRAMBLING MARINE SCIENCE OCCUPATIONS

Directions: Unscramble the following marine science occupations.

dckondha ______

ttbaormoo roopeatr ______

hsif rcie ______

Aquatic Biologist
Sponge Clipper
Driller
Fish Icer
Motorboat Operator
Marine Architect
Fish Culturist
Marine Geologist
Scuba Diver
Petroleum Engineer
Drilling Inspector
Seal Killer
Fish Cleaner
Dockhand
Fish Farmer
Shellfish Grower

llsheshfi rrowge ______

abcsu vider ______

hsif rrmeaf ______

engops ppreicl ______

hfis recanle ______

llrdiing trspnieco ______

enrami eoolgstig ______

meulropet reengine ______

enrami rchatceti ______

catiqau tgisoobli ______

alse lliker ______

llrerid ______

UNIT XIII

MARINE SCIENCE

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE OCCUPATIONAL CLUSTERS AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.

Choose from the activities in supplementary section 1 of this guide.

B. Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.

Choose from the activities in supplementary section 2.

C. Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.

D. Recognize proper safety standards and hazards associated with the duties of a variety of careers.

E. Identify skills that a variety of careers have in common and that are transferable among many careers.

Use the occupational report form found in supplementary section 3.

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.	Choose from the activities in supplementary section 4.
G. Identify and apply basic academic skills relevant to the duties of a variety of careers.	
H. Exhibit productive work habits and attitudes.	

The list of examples of occupations classified in the Marine Science cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT XIII

MARINE SCIENCE

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

The geographical location of your school district will affect the degree with which students can explore occupations in this cluster. Realizing that those programs located in areas where ocean resources are unavailable will have difficulty in portraying work tasks of occupations in this cluster, the activities listed below can be completed, regardless of the location of the program.

A. **The following activity will acquaint students with the duties of a marine meteorologist.**

   1. Duplicate the following page for students.
   2. Inform students that they are to track the movement pattern of Hurricane Mary by matching the latitude and longitude information given.
   3. The students are to then connect the dots showing the pattern of the hurricane.

B. **The activities listed below will require outside class time for completion if used in a career investigation program. Activities could be done for extra credit or as part of a contract grading system.**

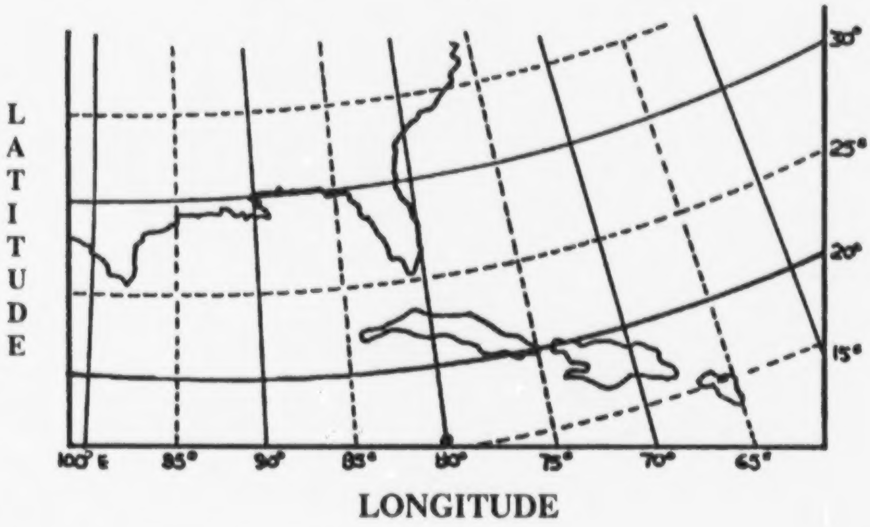
   1. The aquatic biologist studies aquatic plants and animals and the environmental conditions that affect them. An aquatic biologist may branch to specialty areas; for example, a marine botanist specializes in aquatic plant life — a marine zoologist specializes in aquatic animal life. Have the students research the type of plant life and/or animal life found in oceans. Students should prepare a report and, if possible, include pictures of the plants and/or animals.
   2. The seal killer has faced opposition and has been the topic of adverse publicity the last few years. Have the students obtain publications concerning this occupation that include methods of killing the seals. The students should then write a position paper on their viewpoints.
   3. The fish culturist collects, compiles, and interprets data concerning fish habits, growth, migration, food, enemies, etc. Have the students choose a species of fish and prepare a report that includes this information.

4. The marine architect designs and oversees construction of marine craft. Have the students put together a model ship or design a sketch of a ship to portray work tasks of this occupation.

5. The SCUBA diver has an exciting, sometimes dangerous occupation. Have the students research diving. Their reports should include equipment used, safety procedures, method of instruction to learn diving, etc.

UNIT XIII

MARINE SCIENCE
ACTIVITY SHEET 3—MARINE METEOROLOGY


LATITUDE
30°
25°
20°
15°
100° E
85°
90°
85°
80°
75°
70°
65°
LONGITUDE

Congratulations! You have been hired as a marine meteorologist. You were just informed that a tropical storm in the Caribbean has been classified as a hurricane. Your job is to track the hurricane's path. The first one is done for you.

	LONGITUDE	LATITUDE
1st day	80°	15°
2nd day	82°	18°
3rd day	83°	20°
4th day	85°	22°
5th day	87°	25°
6th day	90°	27°
7th day	92°	28°

UNIT XIII

MARINE SCIENCE
UNIT TEST

A. Name five occupations classified in the Marine Science cluster.

1.
2.
3.
4.
5.

B. Discuss an occupation found in the Marine Science cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

MARKETING AND DISTRIBUTION

ROGRESS CHART IS
PACKAGE DESIGN
MILK
MILK
AIF

BEST COPY AVAILABLE

UNIT XIV

MARKETING AND DISTRIBUTION INFORMATION SHEET

I. What is the Marketing and Distribution Cluster?

   A. It is a group of occupations involved in influencing people to buy a product or service and shipping products from manufacturer to seller.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Marketing Management**—occupations involved in planning and directing work in marketing and distribution

   B. **Marketing Research and Analysis**—occupations involved in studying and predicting the buying practices of consumers

   C. **Purchasing**—occupations involved in buying materials and equipment, often for resale

   D. **Sales Promotion and Training**—occupations involved in creating a demand for products

   E. **Selling**—occupations involved in persuading persons to buy a product

   F. **Physical Distribution**—occupations involved in storing and handling goods and products

   G. **Related Business Services**—occupations involved in business and office activities related to marketing

III. Examples of Occupations

MARKETING, MANAGEMENT

Retail Storeowner - (not listed in 1977 edition of D.O.T.) - Operates a private business; uses capital, training, and experience to sell goods to customers in a particular retail category. Usually is the manager if business is small.

Manager, Retail Store - (D.O.T. 185.167-046) - Manages retail business; hires, trains, discharges employees; plans work schedules; supervises pricing, sales promotion, and sales.

Floor Manager

a. **Retail** - (D.O.T. 299.137-010) - Manages and coordinates the activities of workers in one department of a store, assigns duties, hears customers' complaints, reorders new stock.

b. **Wholesale** - (D.O.T. 299.137-010) - Allocates floor space at a wholesale auction, determines the quality of the product, directs workers in selling.

Merchandising Manager - (D.O.T. 185.167-034) - Coordinates all merchandising activities for a business firm; formulates policies, determines the necessary percentage of markup to insure a profit, determines the quantity of merchandise to be stocked. Often a senior officer in a company; in charge of all merchandise; may be in a departmental position.

Wholesaler - (D.O.T. 185.167-070) - Manages an enterprise which buys merchandise from manufacturers in large quantities. Authorizes purchase of stock; supervises workers, informs retail customers of new developments in the market; may direct grading and standardizing of the product.

Sales Manager - (D.O.T. 163.167-018) - Directs sales staffing, training, and performance evaluation; establishes sales goals; advises on promotional activities; analyzes sales statistics to assist management in setting buying policies.

Advertising Manager - (D.O.T. 164.117-010)

a. **Individual company** - Plans the advertising policies of a department store, factory or other business, then directs the company's advertising space, inspects and approves all advertising; supervises other employees in department; if agency used, will choose and work with agency.

b. **Advertising agency** - Directs and is responsible for profitable functioning of an advertising agency; plans, coordinates activities, solicits accounts, contacts media, and supervises personnel.

Warehouse Manager - (D.O.T. 184.167-114) - Directs all warehousing activities; establishes procedures and policies for receiving, handling, and dispensing of warehouse stock, and for maintenance of inventory; hires, trains, and schedules warehouse personnel.

MARKETING RESEARCH AND ANALYSIS

Market Research Analyst - (D.O.T. 050.067-014) - Conducts a systematic study of market conditions through surveys, interviews with specialists in various fields, and data available in the field of marketing. Reports and interprets results to management; supervises application on follow-up; determines potential sales and forecasts trends; may be with independent agency or with company.

Statistician - (D.O.T. 020.167-026) - Plans surveys; collects, organizes, interprets, summarizes and analyzes numerical data on sampling or enumeration bases; applies statistical theory and methods to provide usable information to management.

Statistical Report Writer - (D.O.T. 020.167-026) - Evaluates the results of surveys and other research; presents data, in written form, including charts and graphs.

Foreign Trade Consultant - Uses extensive experience to evaluate, advise, and interpret data for organizations in the areas not familiar to employees of the firm.

PURCHASING

Buyer or Purchasing Agent - (D.O.T. 162.157-038) - Studies consumer wants and buying trends in his own specialized area; visits manufacturing showrooms. At re-order point or when requisitioned, orders merchandise, supplies or equipment, comparing quantity, quality, price, discounts, customer appeal, transportation, and delivery dates. Directs record keeping, sales, and promotion; supervises and trains assistants; checks on actual shipping and handling; and often authorizes payment.

Assistant Buyer - (D.O.T. 162.157-022) - Aids the buyer in keeping records, training sales force, reordering merchandise, working with advertising displays, and directing sales promotion staff.

Broker - (D.O.T. 162.157-042) - Negotiates sales, brings the seller and buyer together, furnishes information on market conditions; does not take title or possession of goods as a rule.

Distributor - (D.O.T. 929.687-030) - Purchases products from wholesalers or producers and retails them under a company or own brand name.

Importer - (D.O.T. 185.157-018) - Imports merchandise from foreign merchants for use or resale; should be fluent in more than one language.

SALES PROMOTION AND TRAINING

Product Designer - (D.O.T. 142.061-026) - Designs commercial products for utilization, decorative effect, styling, or other customer appeal; employed by advertising agencies as well as by producers and manufacturers.

Package Designer - (D.O.T. 142.081-018) - Designs containers for products, considering factors such as convenience, handling, sales promotion, customer appeal and cost.

Window Dresser - (D.O.T. 298.081-010) - Plans and executes commercial displays, applying art, design, selection, and arrangement for the purpose of attracting the attention of customers.

Billposter - (D.O.T. 299.667-010) - Places posters and banners in prominent places to advertise a product or event; displays posters or attaches advertisements on walls and billboards.

Catalog and Brochure Coordinator - Plans and coordinates all advertising activities for catalogs and brochures distributed to customers.

Model - (D.O.T. 297.667-014) - Conveys the image of a product as making life better in some way. Wears, uses, or demonstrates the product, sometimes quoting prices; may travel, do clerical work, or actually sell. Different fields include fashion, photographic, or demonstration work.

SELLING

Salesperson, Household Appliances - (D.O.T. 270.357-034) - Sells radios, television sets, and other household appliances to customers. Explains features of appliances, such as stoves, refrigerators, vacuum cleaners, and washing machines. Demonstrates television, radio, and phonograph sets. May sell service contracts for appliances sold. May demonstrate appliances on display floor of utility company and refer interested customers to appliance dealers for purchase.

Salesperson, Men's and Boy's Clothing - (D.O.T. 261.357-050) - Sells men's and boy's outer garments, such as suits, trousers, and coats. Advises customer about prevailing styles and suitability of garments. Answers questions relative to fabric or design of garment. Selects standard-sized garments nearest to customer's measurements. May mark garment for alterations.

Sales Representative, Telephone Services - (D.O.T. 253.257-010) - Sells telephone services to business accounts. Contacts and visits commercial customers to review telephone service. Analyzes communication needs of business establishments, using knowledge of type of business, available telephone equipment, and traffic studies. Recommends services, such as additional telephone instruments and lines, switchboard systems, dial- and key-telephone systems, private-branch exchanges, and speaker telephones. Quotes rates for equipment and writes up orders. Explains equipment usage, using brochures and demonstration equipment. May specialize in selling services to a particular industry.

Auctioneer - (D.O.T. 294.257-010) - Sells articles at auction to highest bidder. Appraises merchandise before sale and assembles merchandise in lots according to estimated value of individual pieces or type of article. Selects article to be auctioned at suggestion of bidders or by own choice. Appraises article and determines or asks for starting bid. Describes merchandise and gives information about article, such as history and ownership, in order to encourage bidding. Continues to ask for bids, attempting to stimulate buying desire of bidders. Closes sale to highest bidder. May write auction catalog and advertising copy for local or trade newspapers and periodicals. May be designated according to property auctioned.

Group-Sales Representative - (D.O.T. 259.357-010) - Promotes sale of group or season tickets for sports or other entertainment events. Telephones, visits, or writes to organizations, such as chambers of commerce, corporate-employee-recreation clubs, social clubs, and professional groups, to persuade them to purchase group tickets or season tickets to sports or other entertainment events, such as baseball, horse racing, or stage plays. Quotes group-ticket rates, arranges for sale of tickets and seating for group on specific date(s), and obtains payment. May arrange for club to sponsor sports event, such as one of the races at a horse racing track.

Sales Clerk - (D.O.T. 290.477-014) - Obtains or receives merchandise, totals bill, receives payment, and makes change for customers in such retail stores as tobacco shop, drug store, candy store, or liquor store. Stocks shelves, counters, or tables with merchandise. Sets up advertising displays or arranges merchandise on counters or tables to promote sales. Stamps, marks, or tags price on merchandise. Obtains merchandise requested by customer or receives merchandise selected by customer. Totals price and tax on merchandise selected by customer, using paper and pencil, cash register, or adding machine, to determine bill; receives payment, and makes change. Occasionally calculates sales discounts in determining sales slip. Wraps or bags merchandise for customers. Cleans shelves, counters, or tables as necessary. May keep record of sales, prepare inventory of stock, or order merchandise. May be designated according to product sold or type of store.

Salesperson-Demonstrator, Party Plan - (D.O.T. 279.357-038) - Displays and sells merchandise, such as clothes, household items, jewelry, toiletries, or toys, to guests attending house party. Confers with party sponsor to arrange date, time, and number of guests. Sets up display of sample merchandise. Meets guests and converses with them to establish rapport. Discusses items on display or demonstrates uses of product, and explains program to guests. Hands out catalogs or brochures that picture merchandise available. Writes orders for merchandise and arranges for payment. Delivers orders to sponsor or individual and collects monies due. May give small sample items to guests. May discuss program with guests to persuade them to sponsor house party by describing benefits derived from sponsorship. May assist sponsor to serve refreshments.

PHYSICAL DISTRIBUTION

Material Handler - (D.O.T. 929.687-030) - Loads and unloads materials, conveys from storage area to vehicle, opens containers, counts and weighs merchandise.

Packager - (D.O.T. 920.587-018)

a. **Hand** - Packages or wraps various products or materials by hand; may assemble cartons, clean containers, sort, label, inspect and insert product into package.

b. **Machine** - Tends machine that performs packaging functions such as cleaning, filling, sorting, labeling, and weighing products, inspects, makes minor adjustments and repairs; may load conveyer and replenish supplies.

Marker - (D.O.T. 209.587-034) - Prints and attaches price tickets to articles of merchandise, boxes or tickets, or prints price tickets, using machine.

Warehouse Traffic Supervisor - (D.O.T. 922.137-026) - Supervises and coordinates activities of workers engaged in loading and unloading vehicles: schedules and dispatches, directs traffic to and from warehouse.

Mail Order Sorter - (D.O.T. 222.387-038) - Fills mail orders from customers and marks prices of merchandise on order form; examines order form to ascertain catalog number, size, color, and quantity of merchandise; obtains merchandise from shelves, computes price, and conveys to wrapping area for delivery or mailing.

RELATED BUSINESS SERVICES

Although the related business services in the area of Marketing and Distribution are very important, they are usually considered as business and office occupations. For more information concerning these occupations, see the Business and Office cluster unit.

UNIT XIV

MARKETING AND DISTRIBUTION
ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 15 occupations listed below in the word find. Look across, down, diagonally, and backwards.

- Product designer
- Distributor
- Purchasing Agent
- Wholesaler
- Salesperson
- Window Dresser
- Mail Order Sorter
- Material Handler
- Broker
- Importer
- Model
- Bill Poster
- Packager
- Package Designer
- Statistician

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D M A T E R I A L H A N D L E R S T R P
W I N D O W D R E S S E R P N R L A C A
R M S M A R K E T S C I A E Z A A T C C
M A S T A T I S T I C I A N R F E A R K
Y R T T R S Y L A N A C D E A R S Y C A
D K R M A I L O R D E R S O R T E R S G
K E F C D R B N O F S P S N I S C C E E
T F A E C R P U E R S O N M R A S S L D
I B I L L P O S T E R O P R T I D I S E
E D S A C F D R N O A O R A L E S M R S
A A T P A C K A G E R F E R A T A E A I
M C F P A C A T A T D C E E A S L C T G
A F C A F X E S E L E K S L S A C A R N
R D M A Y I I R S E O G A K S A P Y L E
K C N D R T N O S R E P S E L A S E V R
T O H E H E R E B S S A L E D O M B E R
E C C N O T N I R R A O B E K G M A C T
T N E G A G N I S A H C R U P R F E A T
R S A L S P E R O W N T Z X E A R P H O
P R O D U C T D E S I G N E R E R C E D
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UNIT XIV

MARKETING AND DISTRIBUTION ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A. Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.

Choose from the activities in supplementary section 1 of this guide.

B. Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.

Choose from the activities in supplementary section 2.

C. Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.

D. Recognize proper safety standards and hazards associated with the duties of a variety of careers.

E. Identify skills that a variety of careers have in common and that are transferable among many careers.

Use the occupational report form found in supplementary section 3.

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.	Choose from the activities in supplementary section 4.
G. Identify and apply basic academic skills relevant to the duties of a variety of careers.	
H. Exhibit productive work habits and attitudes.	

The list of examples of occupations classified in the Marketing and Distribution cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

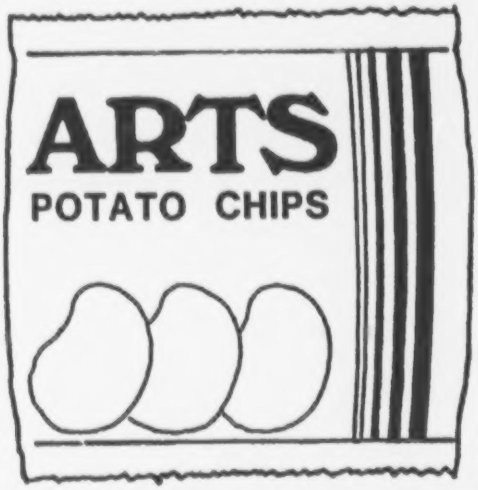
UNIT XIV

MARKETING AND DISTRIBUTION

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. **The activities listed in this section will acquaint students with the work tasks of occupations classified in the sales promotion and training job family.**

1. Have the students create a new brand of potato chips.



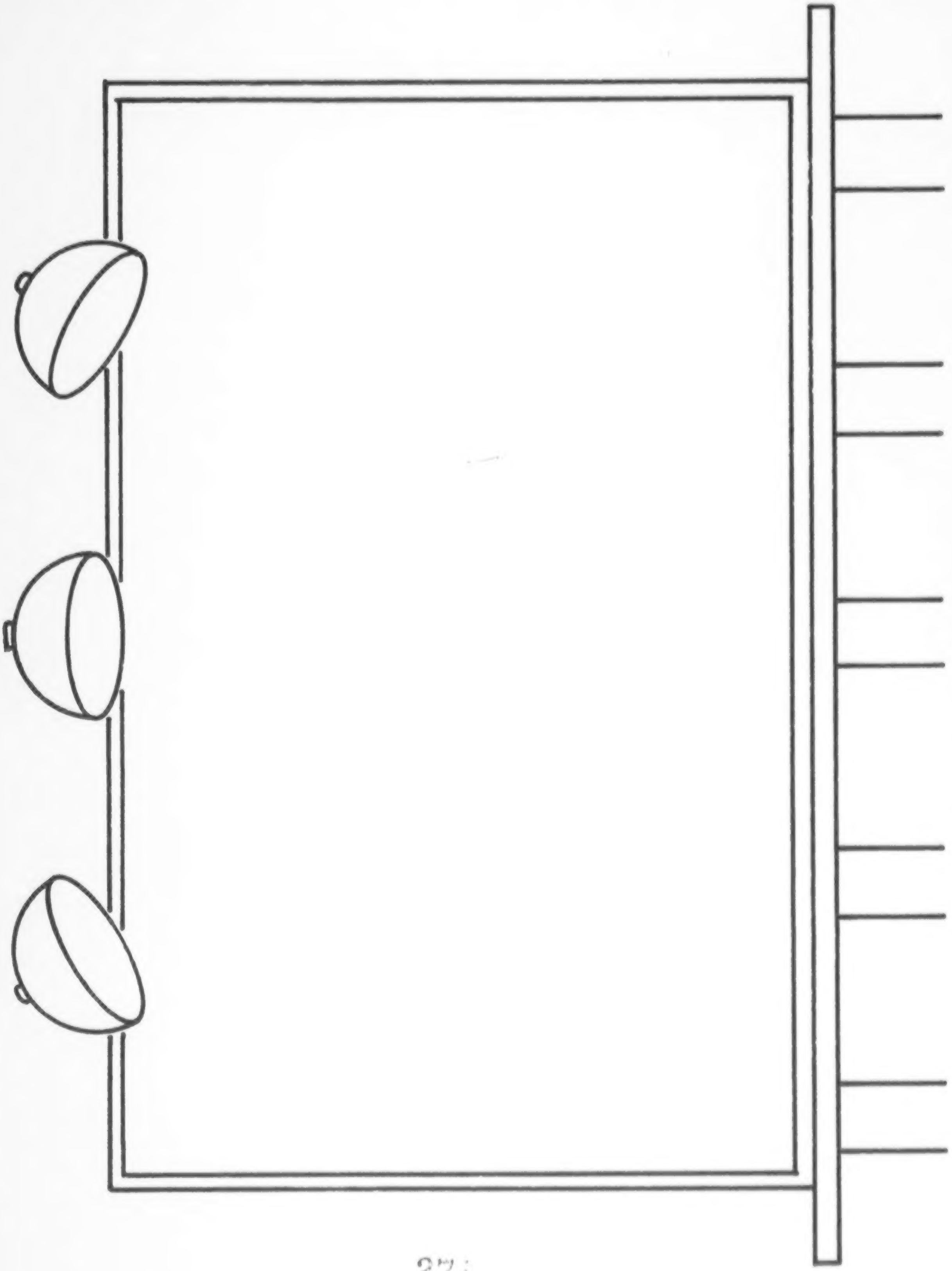
   a. They are to name the chips, decide what the chips will look like (shape, color, etc.), and the ingredients needed to make the chips.

   b. Using construction paper, aluminum foil, felt-tip markers, etc., they are to design the package for the chips.

   c. Students should then be asked to design an advertising campaign for their chips. They should construct a magazine lay-out and a short radio or TV commercial.

   d. Students should be allowed class time to present their product and their advertising campaign.

2. **Have the students create their own billboard—advertising a product or service. Use the sheet on the following page.**



3. This activity is a great way to publicize your program and to acquaint the students with the work tasks of a catalog and brochure coordinator.

    a. Have the students design a brochure promoting your program. Students should include in their brochure the purpose, the information covered, and the benefits of your program.

    b. Two different methods of dissemination of the brochure are possible.

        (1) Display completed brochures.

        (2) Vote on the "best" brochure, make several copies of the brochure, and display the brochures in various businesses in your community and/or pass them out to students not currently enrolled in your class as a means of recruiting.

B. The activities in this section will acquaint students with the work tasks of occupations classified in the selling and related business services job families.

1. **Plan an Auction**

    a. Have students, teachers, businesses, etc., donate items to be sold in an auction (scheduled after school hours, of course). Decide on a charitable organization to which to contribute the funds raised.

    b. Have the students research the auctioneer occupation. If possible, students should be allowed to observe an auctioneer.

    c. Students should audition for auctioneer. You may wish to have several during the course of the auction! Base the decision not solely on the ability to communicate in auctioneer jargon, but by the time contributed to researching the occupation and familiarity with the work tasks as well.

    d. Assign those students not participating as auctioneers occupations—such as, bookkeepers, accounts receivable clerks, secretaries (to write thank-you letters to businesses and individuals who contribute), etc.

2. Selling—The Art of Convincing Others

a. Before beginning this activity, explain your plans to the appropriate administrator and solicit his/her approval. Decide how the profits will be used. Examples are: capital outlay equipment, supplies for your class, field trip transportation, etc. Explain to the administrator that this activity is not only a fund raiser, but a learning experience for the students, as well.

b. Obtain catalogs from fund-raising companies. Student organizations' sponsors usually have several.

c. Select a product to be sold and decide on what dates you will sell the product. Contact a company representative. He/she will inform you on the amount to order, price to charge, etc.

d. Have the students research the salesperson occupation. Discuss the qualities that a salesperson should possess and what makes a person want to purchase items.

e. To add realism to this activity, allow the student who sells the most products to receive a commission. (You may wish to give the top five salespersons commissions. A poster board displayed in the classroom and the amount each student has sold [tallied daily] will provide students with the incentive to sell more. The commission could be in the form of money [taken from the profits], or a special privilege or prize.)

f. After the fund-raising campaign, have the students discuss what problems they encountered, what they enjoyed, etc. Have the students who sold the most products inform the class of what tactics they used to sell the product.

UNIT XIV

MARKETING AND DISTRIBUTION
UNIT TEST

A. Name five occupations classified in the Marketing and Distribution cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Marketing and Distribution cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

PERSONAL SERVICES

Terrace Hotel

BEST COPY AVAILABLE

UNIT XV

PERSONAL SERVICES
INFORMATION SHEET

I. What Is the Personal Services Cluster?

   A. It is a group of occupations involved in personal improvement; the comfort and appearance of a person, and his/her possessions.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Domestic Services**—occupations involved in providing services to household members and their guests

   B. **Lodging and Related Services**—occupations involved in providing general services to persons in hotels and other lodging establishments

   C. **Barbering, Cosmetology, and Related Services**—occupations involved in improving the personal appearance of individuals

   D. **Dry-cleaning, Laundry, and Apparel Services**—occupations involved in improving the appearance of clothes and other personal items

   E. **Stewards, Attendants, Hosts, and Miscellaneous Personal Services**—occupations involved in greeting, serving, guiding, and otherwise attending to customer needs and wishes

   F. **Domestic Animal Care**—occupations involved in the care and training of pets and other domestic animals

   G. **Food and Beverage Preparation and Service**—occupations involved in preparing and serving food and drink to customers

III. Examples of Occupations

DOMESTIC SERVICES

Day Workers - (D.O.T. 301.687-014) - Occupations concerned with performing duties in a private home such as cleaning, making beds, caring for children and cooking. Employment is by the day and work may be for several employers.

Launderer - (D.O.T. 361.684-010) - Occupations concerned with washing and ironing clothes and household linens for one or several families.

Gardener - (D.O.T. 301.687-018) - Employed to keep yard or grounds in orderly condition.

Cook - (D.O.T. 315 Series) - This group includes occupations concerned with planning menus, estimating consumptions, and/or cooking foods in private homes, restaurants, and hotels. Workers usually specialize in a particular area such as: chef, baker, short order cook.

Housekeeper - (D.O.T. 301.474-010) - Concerned with performing a variety of domestic tasks, such as cleaning, dusting, making beds, caring for children, washing, ironing and cooking. May be asked to perform a combination of duties in keeping private home clean and orderly, in cooking and serving meals, and in rendering personal services to family members.

Child Monitor - (D.O.T. 301.677-010) - This occupation concerns caring for children. Included are such activities as dressing, feeding, bathing, overseeing play, keeping clothes in good repair, observing and monitoring play activities, and keeping children's quarters clean and tidy. This occupation may be designated as nurse, infants' monitor, or when employed on a daily or hourly basis, may be designated as baby sitter.

Chauffeur - (D.O.T. 359.673-010) - A chauffeur drives an automobile as ordered by owner or other passenger and performs other miscellaneous duties such as keeping car clean, making minor repairs, and assisting passengers to enter and leave car.

LODGING AND RELATED SERVICES

Manager, Boarding House - (D.O.T. 320.137-010) - The manager supervises and coordinates activities of workers in a boarding house engaged in providing meals and lodging accommodations for transient and permanent guests. He/she may advertise vacancies, show and rent rooms, plan meals, purchase supplies, collect rent and pay bills, participate in cleaning and cooking activities, and make minor repairs to building and furnishings.

Manager, Lodging Facilities - (D.O.T. 320.137-014) - This person manages and maintains temporary or permanent lodging facilities, such as small apartment houses, motels, small hotels, and trailer parks. His/her duties are very similar to the Boarding House Manager (see above). In addition, he/she may provide daily maid service in overnight accommodations, rent equipment such as rowboats, water skis, and fishing tackle, and sell light lunches, candy, tobacco, and other sundry items.

Housekeeper, Hotel and Institutions - (D.O.T. 321.137-010) - The housekeeper supervises work activities of cleaning personnel to insure clean, orderly, attractive rooms in hotels, hospitals, and similar establishments. He/she may assign duties to workers, inventory stock, investigate complaints, make recommendations to management, train new employees, and recommend dismissals.

Bellhop - (D.O.T. 324.677-010) - A bellhop serves hotel guests by performing tasks such as escorting incoming guests to their rooms, assisting them with hand luggage, explaining features of the room, offering information pertaining to available services and facilities, delivering messages, and operating the elevator.

Baggage Porter - (D.O.T. 324.137-010) - The baggage porter delivers luggage to and from hotel rooms, transfers trunks, packages and other baggage to room or loading area, arranges for outgoing freight, supplies travel information, transportation rates and schedules and generally cares for the patron's luggage.

Doorkeeper - (D.O.T. 324.677-014) - A doorkeeper serves residents, guests, or patrons of hotels, stores, or similar establishments by opening doors, hailing taxicabs, answering inquiries, assisting the elderly or infirm into automobiles, and performing similar tasks. He/she may also prevent entrance of unauthorized or undesirable persons and may forcibly eject rowdy persons from the premises.

Room-Service Clerk - (D.O.T. 324.577-010) - This person may be called delivery-room clerk, package clerk, receiving room clerk, or runner. He/she may perform any combination of tasks related to serving guests in apartments, motels or hotels. His/her specific duties may include mail delivery, delivery and removal of articles from guests' rooms, arranging for pressing clothes and shining shoes, and maintaining valet service.

Elevator Operator - (D.O.T. 388.663-010) - The elevator operator will operate an elevator to transport passengers between floors of office buildings, apartment houses, department stores, hotels, or similar establishments. In addition to running the elevator, he/she may supply information to passengers, distribute mail to various floors, answer the telephone, prevent unauthorized persons from entering the building and assist other employees to load and unload freight.

Maintenance Supervisor - (D.O.T. 891.137-010) - This occupation may carry the title building and grounds supervisor, building supervisor, building maintenance supervisor, group supervisor of maintenance, or mechanical supervisor. This is a supervisory position which is responsible for the coordination of activities of workers engaged in all phases of keeping buildings and grounds in clean and orderly condition and in maintaining and repairing utility systems and physical structures.

Janitor - (D.O.T. 382.664-010) - The janitor may keep a hotel, office building, apartment house, or similar building in clean and orderly condition. He/she may sweep, mop, empty garbage containers, perform routine painting, plumbing, electrical wiring, and other related activities while using hand tools. He/she may also mow lawns, trim shrubbery, clean snow and debris from sidewalks, and notify management concerning need for major building repairs.

Porter - (D.O.T. 381.687-014) - Other descriptions of this occupation may include clean-up person, housekeeper, house office, janitor, building maintenance, or sweeper. He/she keeps the premise of commercial establishments, office buildings, or apartment house in clean and orderly condition. In doing this he/she may dust, sweep, mop, or do other such tasks. He/she may work in establishments such as banks, insurance companies, places of amusement, beauty parlors, dental labs, or stores.

Camp Attendant - (D.O.T. 329.467-010) - This attendant performs various duties about a logging, mining, construction, or other camp, such as disposing of garbage, keeping camp area clean, sweeping and tidying sleeping quarters and making beds, carrying water to camp and cutting firewood.

Receiving-Room Clerk - (D.O.T. 222.387-050) - This clerk receives and delivers or forwards packages, baggage, freight, or other items for hotel guests. He/she accepts packages, baggage, and other articles for hotel guests from deliverers and keeps records of items received. In addition to this type of work he/she may arrange for cleaning, laundering, and repair of guest's clothing and other items. He/she then would compute the charge slips for the services rendered to guests and forward them to the bookkeeping department.

Lodging Facilities Attendant - (D.O.T. 329.467-010) - This attendant may be known as an auto-camp attendant, resort caretaker, or tourist-camp attendant. He/she performs various clerical, housekeeping, and maintenance duties at a tourist camp, motel, trailer park, vacation resort, or lodge. In addition, he/she may give information to guests concerning services and facilities, register guests, assign cabins, collect rent, issue supplies, maintain outside recreational areas, and perform other general cleaning and maintenance duties.

BARBERING, COSMETOLOGY, AND RELATED SERVICES

Barber - (D.O.T. 330.371-010) - This occupation is concerned with cutting and shaping hair and mustaches, shaving whiskers and/or trimming beards, giving facial massages, shampoos, and scalp treatment. Barbers may also fit hair pieces.

Manicurist - (D.O.T. 331.674-010) - This occupation is concerned with cleaning, shaping, and polishing fingernails, rubbing lotions on hands and/or massaging them.

Hair Stylist - (D.O.T. 332.271-018) - This person specializes in dressing hair according to latest style, period, or customer preference. The stylist studies the facial features of the patron and arranges, shapes, and trims hair to achieve desired effect, using fingers, combs, barber scissors, hair-waving solutions, hairpins, and other accessories as required. New styles may be created especially for the patron.

Cosmetologist - (D.O.T. 332.271-010) - The cosmetologist may be referred to as a beautician, beauty culturist, beauty operator, or cosmetician. The cosmetologist suggests coiffures according to physical features of patron, styles hair, applies bleach, dye or tint, and suggests cosmetics for conditions such as dry or oily skin. He/she may also perform other beauty services such as massaging face or neck, shaping and coloring eyebrows or eyelashes, removing unwanted hair, and applying solutions that straighten hair or retain curls or waves. He/she may be designated according to beauty service provided as facial operator, finger waver, hair tinter, marceller, permanent waver or shampooer.

Wig Dresser - (D.O.T. 332.361-010) - This occupation is concerned with dressing wigs and hair pieces according to instructions, samples, sketches, or photographs. The wig dresser combs and sets hair using barber and beautician equipment.

Masseurs - (D.O.T. 334.374-010) - This person may be called bath attendant, bath-house attendant, bathman, or rubber. Masseurs' duties include massaging customers and administering other body conditioning treatments for hygienic or remedial purposes. Basic duties include massaging body, administering steam or dry heat, directing clients in activities such as reducing or remedial exercises. Feminine title: Masseuse.

Reducing-Salon Attendant - (D.O.T. 359.567-010) - The attendant performs duties in reducing salons such as spreading paper mats or sheets on table, assisting customers onto table for massaging treatment, turning dial knob on table equipped with automatic timer to start vibrating action, repositioning customer after each treatment and repeating procedure until treatment is completed.

Bath Attendants - (D.O.T. 334.374-010) - These occupations are concerned with assisting clients of public bath houses to take Russian, Sauna, Turkish, electric cabinet, sweatbox, or steam baths, providing and stocking towels, and checking money and valuables.

Cooling-Room Attendant - (D.O.T. 335.677-010) - These occupations are concerned with attending to the comforts and needs of thermal bath customers cooling off and resting after bath and massage. Other duties may include procuring beverage, food, or other items on request, arranging for valet services, changing bedding on cots, shining shoes, and performing janitorial duties in the cooling room area.

Hot-Room Attendant - (D.O.T. 335.677-014) - This attendant serves customers in dry-heat cabinet or room or steamroom of athletic bathing or other establishments. He/she is in charge of operating procedures in the hot-room, and may be designated according to bath facility served as dry-heat cabinet attendant, dry-heat-room attendant, shower attendant, or steam-room attendant.

Embalmer - (D.O.T. 338.371-014) - The embalmer prepares bodies for interment in conformity with legal requirements, reshapes or reconstructs disfigured or maimed bodies using such material as clay, cotton, plaster of paris and wax, applies cosmetics to impart lifelike appearance, dresses body and places body in casket. Other duties may include arranging funeral details, maintaining records, and supplying services to the family of person being embalmed.

Cremator - (D.O.T. 359.685-010) - The cremator tends cremator furnace that cremates human bodies, places rings and jewelry in temporary box for return to relatives, places remains in container, cleans building and fixtures, and may care for lawn and shrubs.

Funeral Attendant - (D.O.T. 359.677-014) - The funeral attendant performs a variety of tasks during a funeral. Specific tasks include placing casket in parlor or chapel prior to wake or funeral service, arranging floral offerings and lights around casket, directing and escorting mourners, issuing and storing funeral equipment, and in some cases carrying the casket. Other names may be undertaker or usher.

Scalp-Treatment Operator - (D.O.T. 339.371-014) - The scalp-treatment operator gives hair and scalp conditioning treatments for hygienic or remedial purposes. Massages, shampoos, and steams hair and scalp of patron to clean and remove excess oil using liquid soap, rinses and hot towels. Other duties include administering remedial treatments to relieve such conditions as falling hair, diseased or itching scalp, using such therapeutic equipment as infrared or ultraviolet lamps, and maintaining treatment records. May also be considered a Hair-and-Scalp Specialist, scalp specialist, or trichologist.

Tattoo Artist - (D.O.T. 339.571-010) - The tattoo artist pricks the skin of the patron, using a needled electric tool that inserts indelible pigment into the skin to form a decorative or ornamental design. Mixes color pigments, adjusts and repairs tools and may draw original designs for tattoo work. Other names for this occupation include jagger, tattooer, and tattooist.

Reducing-Machine-Operator - (D.O.T. 359.567-010) - This person applies muscle vibrating machine to portions of customer's anatomy, assists patron to disrobe and dress, starts and stops vibrating machine, and rubs treated area with special preparation to refresh skin.

Electrologist - (D.O.T. 339.371-010) - The electrologist removes hair or blemishes from skin of patron by electrolysis. May be considered an electric-needle specialist or electrolysis operator.

DRY-CLEANING, LAUNDRY, AND APPAREL SERVICES

Laundry Supervisor - (D.O.T. 361.137-010) - Supervises and coordinates the activities of workers engaged in receiving, marking, washing, and ironing clothes or linens. May be designated according to the activity supervised as flatwork supervisor, laundry-marker supervisor, receiving, marking and washing supervisor, shirt-ironer supervisor, sorting and folding supervisor, or washroom supervisor.

Pricing Clerk - (D.O.T. 216.482-030) - Computes the cost of customer's laundry by pricing each item on customer's list, using adding machine, calculating machine, or comptometer. May keep inventory and prepare statements.

Flatwork Tier - (D.O.T. 361.587-010) - This person folds, stacks, and wraps ironed flatwork. He/she then writes customers' names on the bundles and places them in the storage bin for customer pick up.

Assembler, Wet Wash - (D.O.T. 361.687-010) - This worker reassembles washed laundry according to lot number of individual customer's bundles preparatory to subsequent processing such as tumbling, starching, or ironing.

Classifier - (D.O.T. 361.687-014) - This worker sorts incoming laundry into lots, such as flatwork, starchwork, and colored articles prior to washing.

Rug Cleaner, Machine - (D.O.T. 361.682-010) - This worker operates a machine which soaps, scrubs, rinses, and partially dries rugs and carpets in the laundry plant. He/she usually works on smaller rugs because of limited space in the machine.

Launderer, Hand - (D.O.T. 361.684-010) - This person washes, dries, and irons articles in hand-laundries and laundromats, using equipment such as hand irons and small washing and drying machines.

Carding Machine Operator - (D.O.T. 920.685-034) - This operator tends a carding machine which brushes and raises the nap on blankets.

Spotter - (D.O.T. 361.684-018) - The spotter identifies stains in wool, synthetic, and silk garments and household fabrics, and applies chemical solutions to remove them, determining spotting procedures on the basis of type of fabric and nature of stain.

Dry Cleaner - (D.O.T. 362.382-010) - The dry cleaner operates dry cleaning machines to clean garments, drapes, and other materials that cannot be washed in water without shrinkage or damage to the fabrics, utilizing knowledge of cleaning processes, fabrics, and colors to determine procedures.

Silk Finisher - (D.O.T. 363.681-010) - This presser works with dry cleaned and wet cleaned silk and synthetic fiber garments, using hot-head press or steamtable, puff irons and hand irons. In establishments where many silk finishers are employed, they may be designated according to speciality such as tie presser, etc.

All-Around Presser - (D.O.T. 363.682-014) - This person operates a steam pressing machine or uses a hand iron to press garments such as trousers, sweaters, and dresses, usually in a small cleaning establishment.

Presser, Machine - (D.O.T. 363.682-018) - This person operates a machine to smooth surfaces, flatten seams, or shape articles such as garments, drapes, slipcovers, and hose in manufacturing or dry-cleaning establishments. He/she may be designated according to the article pressed as coat presser, pants presser, etc.

Blocker - (D.O.T. 363.684-010) - The blocker blocks (shapes) knitted garments after cleaning. He/she shrinks or stretches garments by hand until they conform to original measurements and pins garments to cover of steamtable. He/she then applies steam until garment is reshaped.

Hand Presser - (D.O.T. 363.684-018) - This presser uses a hand iron and presses articles such as drapes, knit goods, millinery parts, parachutes, garments, and slip covers or delicate textiles such as lace, rayons, and silks. This class of pressing requires dexterity with hand iron to press intricate parts of articles. He/she may be designated according to article or part pressed such as coat ironer, lining presser, or vest presser.

Flatwork Finisher - (D.O.T. 363.686-010) - This person presses flatwork such as household linens, sheets, pillowcases, tablecloths, and napkins. This type of pressing is done by placing the item on a feeding roller that conveys it into a pressing machine. His/her title may be designated according to the specific operation performed as flatwork catcher; flatwork feeder; flatwork folder.

Shoe Dyer - (D.O.T. 364.684-014) - This person dyes or tints shoes for customers of shoe repair or shoe shining shops. He/she selects prepared dyes or mixes dyes to match shades specified by instructions or color chart, applies dye, and polishes the shoes.

Shoe Repairer - (D.O.T. 365.361-014) - Repairs or refinishes shoes, following customer specification, or according to nature of damage, or type of shoe. He/she may also repair belts, luggage, purses, and other products made of materials such as canvas, leather, and plastic. Other duties include quoting charges, receiving articles, and collecting payment for repairs.

Hatter - (D.O.T. 369.384-010) - The hatter cleans, blocks, trims, and makes minor repairs to all types of men's and women's hats to give them a clean, new appearance. The hatter's classifications are made according to the operation performed such as hand blocker, fur blower operator, hat-blocking machine operator, and hat finisher.

Reweaver - (D.O.T. 782.381-022) - This person weaves threads or patches into fabric articles to repair holes, tears, or worn places using weaver's hand needles. He/she may press the articles using a steam iron or damp cloth and dry iron.

Bootblack - (D.O.T. 366.677-010) - The bootblack cleans and polishes footwear for customers. He/she may also brush lint from patrons clothing using a whiskbroom, assist customers with wraps, sweep and mop floors, dust and polish furniture, and wash windows in the establishment.

Laundrette Attendant - (D.O.T. 369.677-010) - This attendant assists customers to launder or dry clean clothes using self-service equipment. He/she may in some cases perform all the services for the customer. He/she may also sell cleaning agents, collect for services and materials, and unload machines.

Tailor - (D.O.T. 785.261-014) - A tailor designs and makes tailored garments such as suits, topcoats, overcoats, and other dress clothing, applying principles of garment design, construction and styling. He/she may specialize in making garments and be designated accordingly, such as coat tailor.

Dressmaker - (D.O.T. 785.361-010) - The dressmaker makes women's garments such as dresses, coats, and suits according to customer specifications and measurements. This may be done by standard patterns according to measurements of customer, and adapting patterns to obtain specified style, or making the garment according to pictures furnished by customer.

Furniture Cleaner - (D.O.T. 362.684-022) - This person cleans furniture in plants or on customers' premises, using brush, sponge, dry cleaning fluids, or detergents to remove spots, stains, dust, and dirt.

Rug Cleaner - (D.O.T. 689.687-066) - This person cleans rugs with chemical solutions in plants or on customers' premises. This process is usually done by machines that soap, scrub, rinse, and partially dry rugs or carpets.

STEWARDS, ATTENDANTS, HOSTS, AND MISCELLANEOUS PERSONAL SERVICES

Chaperon or Chaperone - (D.O.T. 359.667-010) - A person who accompanies minors on trips to educational or recreational establishments or other functions such as dances, concerts, and sports events. Other duties include following parents' instructions regarding minors' activities, imposing limitations and restrictions to insure their safety, well-being, and conformance to designated behavioral standards, planning free-time activities and arranging for transportation, tickets and meals.

Escort - (D.O.T. 359.367-010) - An escort acts as social partner for person of opposite sex to enable individual to attend functions, participate in activities requiring a partner, or provide companionship or protection while visiting public establishments, such as restaurants, night clubs, theaters, and gambling houses. Other duties may be to suggest places of entertainment, arrange for transportation and tickets, and accompany individual on sightseeing tour. This person may be considered a guide escort.

Chauffeur - (D.O.T. 359.673-010) - A chauffeur drives a private car as ordered by owner or other passenger and performs other miscellaneous duties such as assisting passengers, keeping car clean, polished and in operating condition, and making minor repairs. He/she may be called a driver.

Blind-Aid - (D.O.T. 359.573-010) - This person may be called blind attendant, clerk guide, or blind escort. His/her specific duties include assisting blind persons, driving motor vehicles to transport blind persons to specified locations according to their personal and business activities, carrying brief or sample cases, preparing and maintaining records, and typing correspondence and reports.

Child-Care Attendant - (D.O.T. 355.674-010) - This person attends to personal needs of handicapped children while in school to receive specialized academic and physical training. He/she may help children to walk, board buses, put on braces, eat, dress, and perform other physical activities as their needs require.

Checkroom Attendant - (D.O.T. 358.677-010) - This attendant stores wearing apparel, luggage, bundles, and other articles for patrons of an establishment or employees of business establishment, issuing claimcheck for articles checked and returning articles on receipt of cheek. He/she may be designated according to article stored as baggage checker, coat checker, hat checker, etc.

Flight Attendant - (D.O.T. 352.367-010) - Airline Hostess, Airline Stewardess, Airplane Hostess, Stewardess. See TRANSPORTATION.

Stewards - (D.O.T. 350.137-014) - Stewards, Banquet Steward, Bath Steward, Chief Steward, Club Car Steward, Port Steward, Dining Car Steward, Smoke Room Steward, etc. See specific titles in *Dictionary of Occupational Titles* and TRANSPORTATION.

DOMESTIC ANIMAL CARE

Horseshoer - (D.O.T. 418.381-010) - This occupation is concerned with forging metal bars into horseshoes and fitting and nailing the shoes to hooves of horses and mules using calipers and handtools. He/she may also examine hooves to detect conditions such as bruises and amount of trimming required and make necessary corrections for proper travel.

Dog Groomer - (D.O.T. 418.674-010) - A dog groomer may perform all or a combination of the following duties. Regulate bath water temperature, wash dog, use handbrush, dry dog, trim and shape dog's hair and toenails using scissors and clippers and clean animal's quarters. He/she may also be called dog bather, dog beautician or dog-hair clipper.

Dog-Pound Attendant - (D.O.T. 410.674-010) - This person attends to animals picked up and brought to the pound by feeding and watering them and cleaning and disinfecting their pens. Other duties may include routine repairs to pens and other installations.

Kennel Attendant - (D.O.T. 410.674-010) - A kennel attendant takes care of dogs in kennels. His/her specific duties may include cleaning kennels and rebedding dog pens, washing and grooming dogs, feeding and watering, observing dogs to detect sickness and presence of disease, exercising dogs, maintaining feed and breeding records, and assisting in training dogs for hunting, guiding, and tracking. He/she may also be considered a dog handler.

Pet-Shop Attendant - (D.O.T. 410.674-010) - This person cares for birds and animals in a pet shop. His/her specific duties include feeding and watering birds and animals, cleaning pens and cages, observing birds and animals for signs of sickness or injury, and transferring birds and animals from one cage to another or removing them according to customer selection either manually or by use of a net.

Dog Trainer - (D.O.T. 159.224-010) - This person trains dogs to perform tricks, hunt, track, obey, protect life and property, run races or lead blind. Other duties may include studying characteristics of each breed to learn how dogs should be handled and to detect signs of sickness, teaching dogs to perform duties or tricks by verbal command or signals, and rehearsing dogs according to the script for motion picture or television film.

Horse Trainer - (D.O.T. 159.224-010) - The horse trainer may direct and train horses to perform tricks, follow routines or compete at horse shows. Other duties may include familiarizing horses with harness, bridle, saddle and other riding equipment, conditioning horses, grooming, feeding, exercising horses, supervising workers and giving directions for general care of the animals.

FOOD AND BEVERAGE PREPARATION AND SERVICE

Wine Steward (Hotel and Restaurant) - (D.O.T. 310.357-010) - This steward selects, orders, stores, issues and serves wine. He/she may keep inventory and order wine to replenish stock, store wines vertically or horizontally on racks or shelves, turn wine periodically according to type, discuss wines with guests and taste wine prior to serving.

Chef - (D.O.T. 313.131-014) - A chef supervises, coordinates, and participates in activities of cooks and other kitchen personnel engaged in preparing and cooking foods in hotel, restaurant, cafeteria, or other establishment. He/she may purchase food stuffs, supervise cooking and serving, cut, trim and bone meats, employ, train, and discharge workers, and plan menus.

Baker - (D.O.T. 313.381-010) - The baker mixes and bakes ingredients according to recipe to produce breads, pastries, and other baked goods. After the baking process is completed he/she applies glaze and icing.

Coffee Maker - (D.O.T. 317.684-010) - The coffee maker brews coffee, tea, and chocolate, using coffee urns, drip or vacuum coffee maker, teapots, drink mixers, and other kitchen equipment. He/she may also serve coffee, prepare and issue iced beverages, such as coffee, tea, and fountain or bottled drinks, to be served by waiters.

Pantry Goods Maker - (D.O.T. 317.684-014) - The pantry goods maker prepares salads, appetizers, sandwich fillings, and other cold dishes. He/she may also make sandwiches, brew tea and coffee, prepare breakfast and dessert fruits, such as melons, grapefruit and bananas, and serve food to waiters as requested.

Sandwich Maker - (D.O.T. 317.684-018) - The sandwich maker prepares sandwiches to individual order of customers. He/she may prepare garnishing for sandwiches, such as sliced tomatoes and pickles. He/she may also cook, mix, and season ingredients to make dressings, fillings, and spreads.

Kitchen Helper - (D.O.T. 318.687-010) - The kitchen helper performs any combination of duties to maintain the kitchen work areas and restaurant equipment and utensils in a clean and orderly condition. The job is basically a cleaning duty; however, he/she may also transfer supplies, set banquet tables, and wash and peel vegetables.

Kitchen Steward - (D.O.T. 318.137-010) - This steward supervises kitchen employees not actively engaged in cooking to insure clean, efficient, and economical food service. He/she may assign duties, inspect the kitchen, and hire and discharge employees.

Waiter - Waitress (Informal) - (D.O.T. 311.477-030) - This person serves food to patrons at counters and tables of coffeeshops, lunchrooms, and other dining establishments where food service is informal. Specifically, this person may present menus, make suggestions regarding food, relay orders to kitchen, observe guests to fulfill any additional requests and to perceive when meal has been completed, total bill, and clear and reset counters or tables at conclusion of each course.

Caterer - (D.O.T. 187.167-106) - The caterer plans details of menus with client and gives directions to personnel engaged in preparing and serving food and refreshments at social functions.

Bartender - (D.O.T. 312.474-010) - The bartender may be called bar attendant or barkeeper. He/she may mix and serve alcoholic and non-alcoholic drinks to patrons of a bar, serve wine and beer, collect money for drinks served, order supplies, slice and pit fruit for garnishing drinks, prepare appetizers, and keep the bar area in a neat and orderly manner.

Fountain Server - (D.O.T. 319.474-010) - The fountain server prepares and serves soft drinks and ice cream dishes, such as ice cream sundaes, sodas, and fruitades, using memorized formulas and methods or following written directions. He/she may also clean and polish fountain equipment.

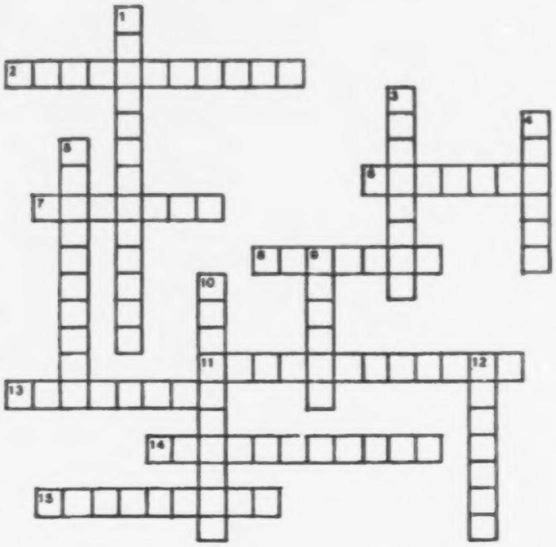
Car Hop - (D.O.T. 311.474-010) - This waitress serves food and refreshments to patrons in their cars; takes food orders, relays it to the kitchen, places filled order on tray and fastens tray to car door; presents check to customer, accepts payment, removes tray, and returns dishes to kitchen.

UNIT XV

PERSONAL SERVICES

ACTIVITY SHEET 1—CROSSWORD PUZZLE

Directions: Use Section III of the Information Sheet to assist you in completing the crossword puzzle below.



ACROSS

2. Performs variety of domestic tasks, such as cleaning, making beds, caring for children, washing, ironing, and cooking
6. Keeps buildings clean and orderly
7. Escorts incoming guests to their rooms; handles luggage
8. Plans details of menus of food and refreshments served at social functions
11. Pricks skin with needled electric tool to form a design

DOWN

1. Removes hair or blemishes from skin
3. Prepares bodies for funeral and burial
4. Cuts and shapes hair, mustaches, and beards
5. Makes women's garments, such as dresses, coats, etc.
9. Designs and makes tailored garments

13. Keeps yards and/or grounds in orderly condition

14. Specializes in dressing hair according to latest period, style, or customer preference

15. Drives automobile as ordered by owner and/or passengers

10. Trains dogs to perform tricks, hunt, track, protect life and property, and to lead blind

12. Identifies stains in wool, synthetics, and silk fabrics

UNIT XV

PERSONAL SERVICES
ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Personal Services cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT XV

PERSONAL SERVICES

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THE CLUSTER

A. Have students cut from magazines pictures that represent the latest hair styles. Have them share their findings.

B. Have students research the proper methods for training animals. The students should then prepare a written report or present an oral report to the class. If possible, allow students to demonstrate.

C. Have students offer to assist your school janitor for one class period.

D. Have students prepare lunch for the teachers and administrators in your school. Prepare something simple, such as sandwiches, chips, and soft drinks. Utilize those occupations classified in the food and beverage preparation service job family.

E. Have students visit a local hotel and/or motel in your community and prepare a report on what occupations they observed being performed.

F. OCCUPATION: SPOTTER

Have students research common stains in clothing, e.g., ink, chocolate, soft drinks, grease, etc. The students should then prepare a chart showing the chemical solutions used to remove them. The students may need to visit a dry cleaning business in your community to obtain this information.

UNIT XV

PERSONAL SERVICES
UNIT TEST

A. Name five occupations classified in the Personal Services cluster.

1.

2.

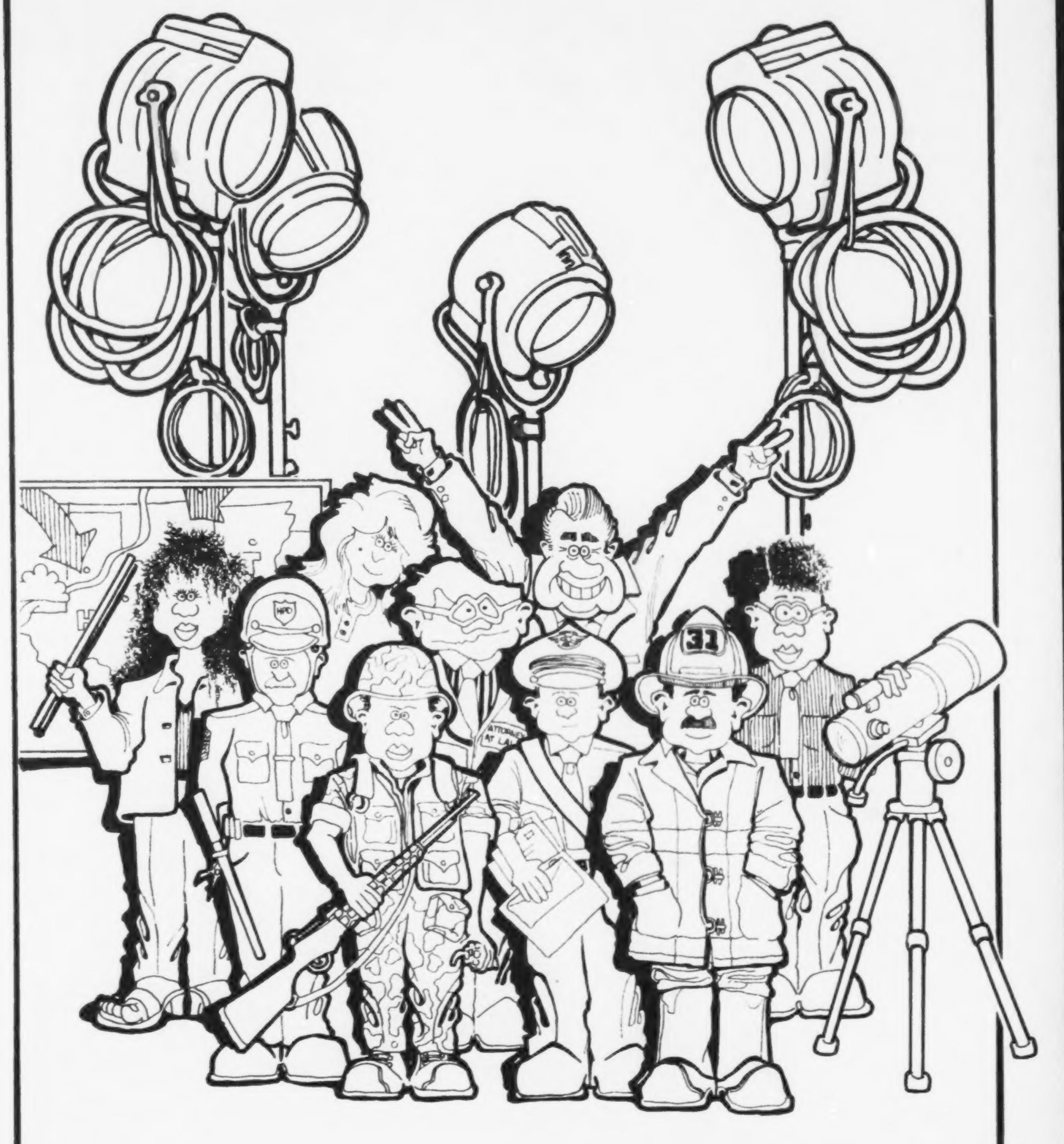
3.

4.

5.

B. Discuss an occupation found in the Personal Services cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

PUBLIC SERVICES



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UNIT XVI

PUBLIC SERVICES
INFORMATION SHEET

I. What is the Public Services Cluster?

   A. It is a group of occupations involved in benefitting society as a whole; salaries are paid by taxes.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Administration and Regulatory Services**—occupations involved in licensing, regulating, policy making and record keeping

   B. **Urban Development**—occupations involved in studying and solving problems of cities

   C. **Education**—occupations involved in the training and education of members of society

   D. **Protective Services**—occupations involved in preserving national freedom and protecting individual rights

   E. **Postal Services**—occupations involved in transporting and delivering the mail

   F. **Public Utilities**—occupations involved in producing and distributing water, electricity, and gas

   G. **Public Health**—occupations involved in disease control and prevention, usually through public facilities

   H. **Labor Affairs**—occupations involved in providing services to labor

   I. **Public Transportation**—occupations involved in developing and regulating public highways, bridges, waterways, and other means of transportation

   J. **Social Services, Rehabilitation, Correction**—occupations involved in providing services to citizens, usually in the areas of welfare, human development, mental health, and rehabilitation

   K. **Parks and Recreation**—occupations involved in developing and regulating public recreational areas

III. Examples of Occupations

(NOTE: Many occupations classified in the other clusters would fit in this cluster **if they are employed by agencies funded by government monies**)

ADMINISTRATION AND REGULATORY SERVICES

City Manager - (D.O.T. 188.117-114) - Usually appointed by elected officials (mayor, council, etc.). Duties include appointment of department heads and their staffs; coordination and administration of operations including tax collection and disbursement, law enforcement, maintenance of public works, preparation of annual budget. Studies controversial issues, such as unionization of government employees and urban renewal. Plans for future development of cities to provide for growth of population and expansion of public services. Directs a supporting staff including administrative assistants, department head assistants, and assistant city manager.

Astronomer - (D.O.T. 021.067-010) - Studies the structure, extent, and evolution of the universe. Collects and analyzes data on the sun, moons, planets, and stars, and attempts to determine the sizes, shapes, surface temperatures, chemical compositions, and motions of these bodies and makes studies of the gases and dust between them. Computes the positions of the planets; calculates the orbits of comets, asteroids, and artificial satellites; makes statistical studies of stars and galaxies, and studies the origin and nature of cosmic radiation. Studies the size and shape of the earth and the properties of its upper atmosphere. Astronomical observations are valuable to navigation and the accurate measurement of time.

Meteorologist - (D.O.T. 025.062-010) - Studies atmospheric phenomena—not only of the earth, but of all celestial bodies. Attempts to describe and understand the atmosphere's constituents, motions, processes, and influences. Helps solve many practical problems in agriculture, transportation, communications, health, defense, and business.

Bank Officer - (D.O.T. 186 series) - Makes decisions within a framework of policy set by the board of directors and existing laws and regulations. Must have a broad knowledge of business activities. Analyzes the collateral, and evaluates carefully the credit analysis on the individual or business firm applying for a loan. Understands each account he/she administers. Invests wisely to manage trust funds which were established for such purposes. Besides supervising financial services, advises individuals and business representatives and participates in many different kinds of community projects. Also, see Business and Office cluster.

Civil Engineer - (D.O.T. 005.061-014) - Designs and supervises the construction of roads, harbors, airfields, tunnels, bridges, water supply and sewage systems, and buildings. Major specialties within civil engineering are structural, hydraulic, sanitary, transportation (including highways and railways), and soil mechanics. Many civil engineers are in supervisory or administrative positions ranging from site supervisor of a construction project or city engineer to top-level executive.

URBAN DEVELOPMENT

Urban Planner - (D.O.T. 199.167-014) - Develops comprehensive plans and programs for the growth and overall re-vitalization of urban communities. Attempts to remedy urban problems such as deteriorating business and residential areas, traffic congestion, inadequate parks and recreation facilities, shortages of suitable space for industrial development, and air pollution.

Anthropologist - (D.O.T. 055.067-010) - Studies humans, their origins, physical characteristics, culture, traditions, beliefs, customs, languages, material possessions, and their structural social relationships and value systems. Some of the specialities include: ethnologists, archaeologists, linguists, and physical anthropologists. Deals in the administration of dependent people and resettlements. State and local government agencies employ some anthropologists for museum work or health research.

Geographer - (D.O.T. 029.067 series and 059.088) - Studies the spatial characteristics of the earth's terrain, minerals, soils, water, vegetation, and climate. Relates these characteristics to changing patterns of human settlement—where people live, why they are located there, and how they earn a living. Urban geography, a growing field for geographers, is concerned with the study of cities and community planning.

Political Scientist - (D.O.T. 051.067-010) - Political science is the study of government—what it is, what it does, and how and why. A political scientist is interested in government at every level. Specializes in one general area of political science, such as political theory, U.S. political institutions and processes, comparative political institutions and processes, or international relations and organizations. Studies proposed legislation for state or municipal legislative reference bureaus or for congressional committees.

Sociologist - (D.O.T. 054.067-014) - Studies the groups which humans form in their association with others—families, tribes, communities, and states, and a great variety of social, religious, political, business, and other organizations. Studies the behavior and interaction of these groups, traces their origin and growth, and analyzes the influence of group activities on individual members. Works in specialized areas such as social organization, social psychology, or rural sociology; intergroup relations, family problems, social effects of urban living, population studies, or analyses of public opinion. Conducts surveys or concentrates on research methods. May apply sociological knowledge and methods in penology and correction, education, public relations in industry, and regional and community planning. May specialize in medical sociology—the study of social factors that affect mental and public health.

EDUCATION

Kindergarten and Elementary School Teacher - (D.O.T. 092.027-014) - Provides the children with experience in play, music, artwork, stories, and poetry; and introduces them to science, numbers, language, and social studies. Helps to develop a child's curiosity and zeal for learning, as well as to stimulate ability to think. Plans the next day's work, prepares the children's school records, confers with parents or professional personnel concerning individual children, participates in teacher's in-service activities, and locates and becomes familiar with teaching resources. Frequently works with one group of pupils during the entire school day. Teaches several subjects and supervises various activities such as lunch and play periods. In some school systems may teach one or two subjects to several groups of children. May be employed to give instruction and to assist classroom teachers in certain subjects such as art, music, physical education, industrial arts, foreign languages, and homemaking. May be required to teach all subjects in several grades. Programmed instruction, including the use of teaching machines and "talking typewriters," and the increasing use of teacher aides are freeing growing numbers of elementary and kindergarten teachers from routine duties and allowing them to give more individual attention to their students.

Secondary School Teacher - (D.O.T. 091.027-010 through .228) - Specializes in a particular subject. Teaches several classes every day, either in the main subject, in related subjects, or both. The teaching method may vary from formal lectures to free discussions, depending on the subject and the students' needs and aptitudes. Plans and develops teaching materials, develops and corrects tests, keeps records, and makes out reports, consults with parents, supervises study halls, and performs other duties. The growing use of teaching machines, programmed instruction, and teacher aides relieves the teacher of many routine tasks. May supervise student activities, such as clubs and social affairs—sometimes after regular school hours. Maintains good relations with parents and the community.

College and University Teacher - (D.O.T. 090.227-010) - Instructs in the social sciences, teacher education, English and journalism, fine arts, mathematics, physical or biological sciences, engineering, or the health professions. Prepares and delivers lectures, leads class discussions, directs graduate students in teaching freshman courses, prepares tests and instructional materials, counsels and assists individual students, and checks and grades assignments and tests. Grading is sometimes done by teaching assistants or, for objective tests, by computers. In many two- or four-year institutions, the usual teaching load is twelve to fifteen hours a week. Associate professors and full professors—who advise graduate students and often engage actively in research—may spend only six to eight hours in actual classroom work. May conduct or direct research, write for publications, or aid in college administration. May act as consultants to business, industrial, scientific, or government organizations.

School Counselor - (D.O.T. 045.107-010) - Concerned with the educational, vocational, social and personal development of students. Works with students, both individually and in groups, as well as with teachers, other school personnel, parents, and community agencies. Talks with students, referring to their school and other records, and using tests to help assess a student's chances of success in given studies or occupations. Helps the student analyze and interpret the results, and develops with him/her—and sometimes with his/her parents—a course of study and an educational plan fitting his/her abilities, interests, and vocational opportunities.

Librarian - (D.O.T. 100.127-167) - Makes information available. Selects and organizes collections of books, pamphlets, manuscripts, periodicals, clippings, and reports, and assists readers in their use. May make available phonograph records, maps, slides, pictures, tales, films, paintings, Braille and talking books, microfilms, and computer tapes and programs. Publicizes library services, studies the reading interests of people served by the library, and provides research and a reference service to various groups. May review published materials and prepare bibliographies.

PROTECTIVE SERVICES

Federal Bureau of Investigation (FBI) Special Agent - (D.O.T. 375.167-042) - Investigates many types of violations of federal laws, such as bank robberies, kidnappings, frauds against the government, thefts of government property, espionage, and sabotage.

Police Officer - (D.O.T. 375.263-014) - Helps to preserve law and order. Prevents criminal activities, investigates crimes, and apprehends and assists in the prosecution of offenders. Exercises authority whenever necessary.

Fire Fighters - (D.O.T. 373.364-010) - Performs specific jobs assigned by a commanding officer; connects hose lines to hydrants, operates pump, positions ladders, and performs other duties. Uses his/her own initiative and judgment.

Military - (D.O.T. 378 series) - Many occupations fall under this broad series. Detailed up-to-date information can be obtained from local armed forces recruiting stations concerning the career options.

Civil Defense - Basically, civil defense in the United States is civil government—federal, state, local—prepared for effective action to limit damage and speed recovery in the event of a major disaster, i.e., natural disaster or enemy attack. A natural disaster is defined as fire, falling aircraft, flood, earthquake, and tornado. At the national level, civil defense emphasizes the role of civil government in national defense. Most of the jobs are filled through coordinated efforts of volunteer citizens, under the leadership of a Civil Defense Training Officer.

Civil Defense Training Officer - (D.O.T. 169.127-010) - Coordinates civil defense in techniques for meeting disaster situations. Prepares information materials, such as pamphlets, speeches, and radio scripts to inform public of preparedness measures. Addresses civic groups and participates in broadcasts to alert citizenry to need for civil defense activity. Conducts classes in first aid, use of radiological monitoring equipment and techniques, shelter management, fire fighting, disaster communications and organization, and post-attack operations for paid or volunteer workers. Confers with federal and state authorities, and with representatives of police, fire, sanitation and public works departments to coordinate training efforts. May participate in or prepare surveys of physical geography of area for formulating post-attack plans. May specialize in one or more phases of civil defense activity in addition to training and be designated according to responsibility as civil defense officer, civil defense radiological officer, shelter management officer.

POSTAL SERVICES

Management - This would include the administration positions within the United States Postal Service in Washington, D.C., as well as the five regional offices throughout the nation.

Postmaster - (D.O.T. 188.167-066) - Supervises and coordinates activities of workers engaged in postal and related work in assigned post office. Resolves customer complaints and informs public of postal laws and regulations. Submits detailed and summary activity reports to designated superior.

Mailhandler - May be found in the larger post office installations only. Does not work the mail which requires knowledge of sorting procedures, but physically handles the mail, transferring it, loading/unloading the mail to/from trucks. May operate a mail cancelling machine.

Clerical - (D.O.T. 209.587-026) - Sells stamps, savings certificates, money orders; registers and insures mail; sorts and examines mail.

Carrier - (D.O.T. 230.367-010) - Sorts mail for delivery and delivers mail on established route. Completes delivery forms, collects charges, and obtains signature on receipts for delivery of specified types of mail.

Motor Vehicle - May be found in larger post offices only. This is a facility for maintaining (mechanically) all post office vehicles, and also the necessary record keeping.

Special Delivery - May be found in larger post offices only. Delivers all special delivery mail upon arrival. May also perform some clerical work such as getting the mail ready to be worked.

PUBLIC UTILITIES

Pumping Station Supervisor - (D.O.T. 954.130-010) - Supervises and coordinates activities of workers engaged in operating equipment, such as pumps, valves, turbines, and electric motors to transfer, distribute, and regulate pressure and flow of raw and processed water. Trains workers in operation and maintenance of equipment. Records data.

Water Treatment Plant Operator - (D.O.T. 954.382-014) - Controls treatment plant equipment to purify and clarify water for human consumption and industrial use. Controls flow of raw water into plant by starting and regulating operation of electric motors, pumps, and valves. Adds specified amounts of chlorine, ammonia, lime, and other chemicals to disinfect, deodorize, and clarify water, or adjusts automatic devices which admit chemicals in controlled amounts. Monitors control panel consisting of meters and gauges to determine rate of flow, loss of head, and water elevation, and manipulates switches to adjust distribution of water. Records such data as residual content of chemicals, water turbidity, and water pressure. May filter water through rotating screens to remove coarse impurities.

Wastewater Treatment Plant Operator - (D.O.T. 955.362-010) Controls equipment and facilities to remove waste materials or render them harmless to human, animal, and fish life. By operating and maintaining pumps, piping, and valves that connect system to the wastewater treatment facility, operators move the wastewater through the various treatment processes.

These processes make water fit for human consumption, or acceptable to dump into receiving streams.

Boiler Operator - (D.O.T. 950.382-010) - Regulates the fuel, air, and water supply in the boilers and maintains proper steam pressure needed to turn the turbines, on the basis of information shown by gauges, meters, and other instruments. Employed only where steam is used to generate electricity.

Turbine Operator - (D.O.T. 952.362-042) - Controls the operation of steam or water-powered turbines which drive the generators. Records the information shown by these instruments and checks the oil pressure at bearings, the speed of the turbines, and the circulation and amount of cooling water in the condensers which change the steam back into water.

Watch Engineer - (D.O.T. 950.131-014) - Oversees the employees who operate and maintain boilers, turbines, generators, auxiliary equipment, switchboards, transformers, and other machinery and equipment.

Load Dispatcher - (D.O.T. 952.167-014) - Controls the flow of electricity throughout the area served by the utility. The load dispatcher's room is the nerve center of the entire utility system.

Meter Installer and Remover - (D.O.T. 729.281) - Installs, tests, maintains, and repairs meters on customers' premises, particularly those of large industrial and commercial establishments.

PUBLIC HEALTH

See Health cluster for specific job titles and descriptions, with these possible exceptions:

County Health Officer - (D.O.T. 070.101-046) - Responsible for health services for a county. Provides medical care for eligible persons, and institutes program of preventive health care in county, city, or other government or civic division. Gives vaccinations, imposes quarantines, and establishes sanitary and other health standards for hospitals, restaurants, and other public places.

Sanitarian - (D.O.T. 079.117-018) - Plans, develops, and executes environmental health programs. Organizes and conducts training program in environmental health practices for schools and other groups. Determines and sets health and sanitation standards and enforces regulations concerned with food processing and serving collection and disposal of solid wastes, sewage treatment and disposal, plumbing, vector control, recreational areas, hospitals and other institutions, noise, ventilation, air pollution, radiation, and other areas. May be assisted by a sanitary inspector.

Field Health Officer - (D.O.T. 168.167-018) - Locates, advises, and questions persons suspected of exposure to communicable diseases to prevent further spread of disease. Traces exposed persons; advises them to seek treatment; writes reports of findings. Sometimes referred to as an epidemiological investigator.

LABOR AFFAIRS

State Employment Commission - The State Commission's major service is that of job placement. The Commission includes an administrator, associate administrator, and administrative staff at the state level; also, district director, clerical workers, and counselors at the local level.

Along with offering placement services in the local industries, they offer many job opportunities in government programs.

Safety Engineer - (D.O.T. 012.061-014) - Applies knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws to prevent or correct injurious environmental conditions and minimize effect of human traits which create hazards to life and property or reduce worker morale and efficiency. He/she examines machinery and equipment; designs safety devices; inspects premises and equipment; studies each accident to ascertain the cause; educates employer and employee in safety measures.

Compliance Investigator - (D.O.T. 168.267-062) - Investigates business establishments and individuals to settle claims or insure compliance with state and federal laws and regulations, such as those governing child labor, wages and hours, and financial responsibility. Interviews persons, observes environmental conditions, and examines records, such as financial statements, payrolls, correspondence, and school grade-transcripts, to obtain or verify information and determine individual's or firm's responsibility under law. May make determinations or judgments and settle claims.

Time Study Engineer - (D.O.T. 012.167-070) - Develops work measurement procedures and directs time-and-motion studies to promote efficient and economical utilization of personnel and facilities. Applies mathematical analysis to determine validity and reliability of sampling and work study statistics. Applies principles of industrial psychology to evaluate work methods proposals and to develop recommendations to management affecting work methods, wage rates, and budget decisions. Trains industrial-engineering technician in time-and-motion study principles and techniques.

Labor Union Business Agent (D.O.T. 187.167-018) - Manages functions of labor unions, such as relations of union with public, press, and employers, promoting membership, placing union members in jobs, arranging details of meeting, hiring halls, and obtaining speakers. Negotiates with management in hours, wages, individual grievances, and other matters affecting employees.

PUBLIC TRANSPORTATION

Public Transportation - The tremendous advances and growth in public transportation have resulted in the need for more workers and advanced technology. The design, construction, and maintenance of public highways requires planning, land acquisition, bridges and tunnels, engineering and inspection, road repair, care of right-of-way, landscaping, toll collection, and electronic and electric equipment installation and maintenance. Provides jobs in such areas as rapid transit, railroads, buses and trucks, airports and terminals, traffic control, maintenance, inland waterways operation, port authorities, turn-pike and tollbridges, registration and licensing, and inspection.

For specific job titles and description, see the Transportation cluster.

SOCIAL SERVICES, REHABILITATION, CORRECTION

Social Worker - (D.O.T. 195.107 series) - Concerned with poverty; broken homes; physical, mental, and emotional handicaps; antisocial behavior; racial tensions; and unsatisfactory community conditions such as inadequate housing and medical care, and lack of educational, recreational, and cultural opportunities. As noted by the *Dictionary of Occupational Titles*, training as a social worker will enable one to choose from a number of speciality areas.

Family Service positions in state and local governments and voluntary agencies provide counseling and social services that strengthen family life and help clients to improve their social functioning.

Child Welfare positions in government and voluntary agencies improve physical and emotional well-being of deprived and troubled children and youth.

Social Aid—Children whose unsatisfactory behavior or progress in school is related to their social problems, are the concern of social workers. These workers consult and work with parents, teachers, counselors, and other school personnel in identifying and seeking a solution to the problems that hinder satisfactory adjustment.

Hospitals, Clinics, Health Agencies, Rehabilitation Centers, and Public Welfare Agencies employ social workers who aid patients and their families with social problems accompanying illness, recovery, and rehabilitation. They usually function as part of a medical team composed of physicians, therapists, and nurses.

Mental Health Centers, Mental Hospitals or Clinics employ social workers. As members of teams that also include psychiatrists, psychologists, and other professional personnel, they develop and report the information on the patient's family and social background for use in diagnosis and treatment.

Rehabilitation Services are provided by the social worker in assisting the emotionally or physically disabled in adjusting to the demands of everyday life.

Probation and Parole are other roles of a social worker in assisting persons on probation or parole and juvenile offenders in readjusting to society. They investigate the social history and background of the person under the jurisdiction of the court and make reports to the court to help the judge in his/her judicial decisions. They also counsel persons on probation or parole, may help them secure necessary education or employment, and direct them to other services in the community.

Lawyer - (D.O.T. 110.107 series) - Advises clients of their rights and obligations and, when necessary, represents them in courts of law. Negotiates settlements out of court and represents clients before quasi-judicial and administrative agencies of the government. May act as trustees, guardians, or executors. Government attorneys play a large part in developing and administering federal and state laws and programs; they prepare drafts of proposed legislation, establish law enforcement procedures, and argue cases. Many people who have legal training are not employed as lawyers but are in other occupations where they can use their knowledge of law. They may, for example, be insurance adjusters, tax collectors, probation officers, credit investigators, or claims examiners. A legal background also is a valuable asset to people seeking or holding public office.

PARKS AND RECREATION

Many of the occupations classified in this job family will be found in the Hospitality and Recreation cluster. As modern technological advances continue, we will have more leisure time; therefore, occupations dealing with recreation will expand and the government will continue to fund these projects. Many of the occupations dealing with the upkeep of the facilities will be found in the Agri-Business and Natural Resources and the Environment clusters.

UNIT XVI

PUBLIC SERVICES

ACTIVITY SHEET 1—ALPHABETIZING PUBLIC SERVICE OCCUPATIONS

Directions: Alphabetize the following 20 public service occupations. Be sure to check your answers—one wrong could make the remainders wrong!

Lawyer 1.______________________________
Police Officer 2.______________________________
Sociologist 3.______________________________
College and University Professor 4.______________________________
Fire Fighter 5.______________________________
Civil Defense Training Officer 6.______________________________
Postmaster 7.______________________________
Wastewater Treatment Plant Operator 8.______________________________
Mail Carrier 9.______________________________
County Health Officer 10.______________________________
Labor Union Business Agent 11.______________________________
Probation Officer 12.______________________________
Teacher 13.______________________________
Meteorologist 14.______________________________
Civil Engineer 15.______________________________
Political Scientist 16.______________________________
City Manager 17.______________________________
Urban Planner 18.______________________________
Anthropologist 19.______________________________
Librarian 20.______________________________

UNIT XVI

PUBLIC SERVICES

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the students of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinentinformation concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Public Services cluster found in the Information Sheet may be used as a guide for occupations of resource people to contact to speak to your class, work sites to use for field trips, and films and/or filmstrips that would provide information concerning occupations in this cluster.

UNIT XVI

PUBLIC SERVICES

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THIS CLUSTER

A. Have students review the occupations classified in this cluster. Then have the students divide into two debate teams. Have the students debate the pros and cons of tax moneys being used for support of these occupations.

B. To portray one of the work tasks of occupations classified in the protective services job family, have the students fingerprint each other. Support of this project can most likely be secured from your local police department as Operation Child Find is spreading nationwide.

Supplies Needed:

1. Ink pads
2. Copies of the fingerprint card on the following page

C. Have students participate in a mock trial. Possible roles to be played by the students are listed below:

Judge

Prosecuting Attorney

Criminal Defense Attorney

Defendant

Jury (12 members)

Bailiff

Witnesses

Arresting Officer(s)

D. Use the sheet on page 541 as a guide for students to create their own postage stamp.

E. Have students teach a lesson to the class. Be sure to give the students "pointers" before they begin instruction.

F. Reinforce the fact that fire prevention is an important responsibility of municipal fire departments. Have the students look for possible fire hazards in their homes and at school. Have the students report on the fire hazards they found and ways to eliminate the hazards.

FINGERPRINT CARD

Name ______________________________ School ______________________________

Age __________ Sex __________ Date fingerprinted ______________________________

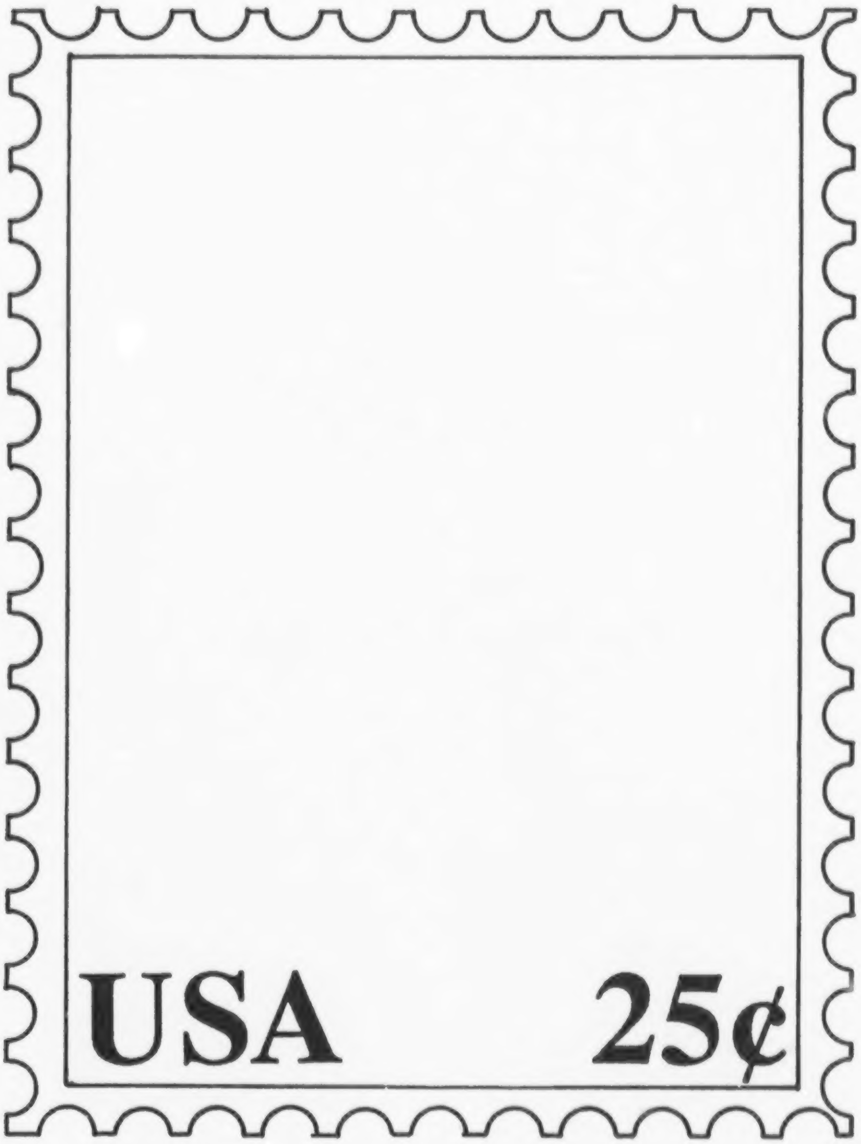
RIGHT HAND

1. Thumb	2. Index Finger	3. Middle Finger	4. Ring Finger	5. Little Finger

LEFT HAND

6. Thumb	7. Index Finger	8. Middle Finger	9. Ring Finger	10. Little Finger

____
Your usual signature


USA
25¢

UNIT XVI

PUBLIC SERVICE
UNIT TEST

A. Name five occupations in the Public Services cluster.

1.

2.

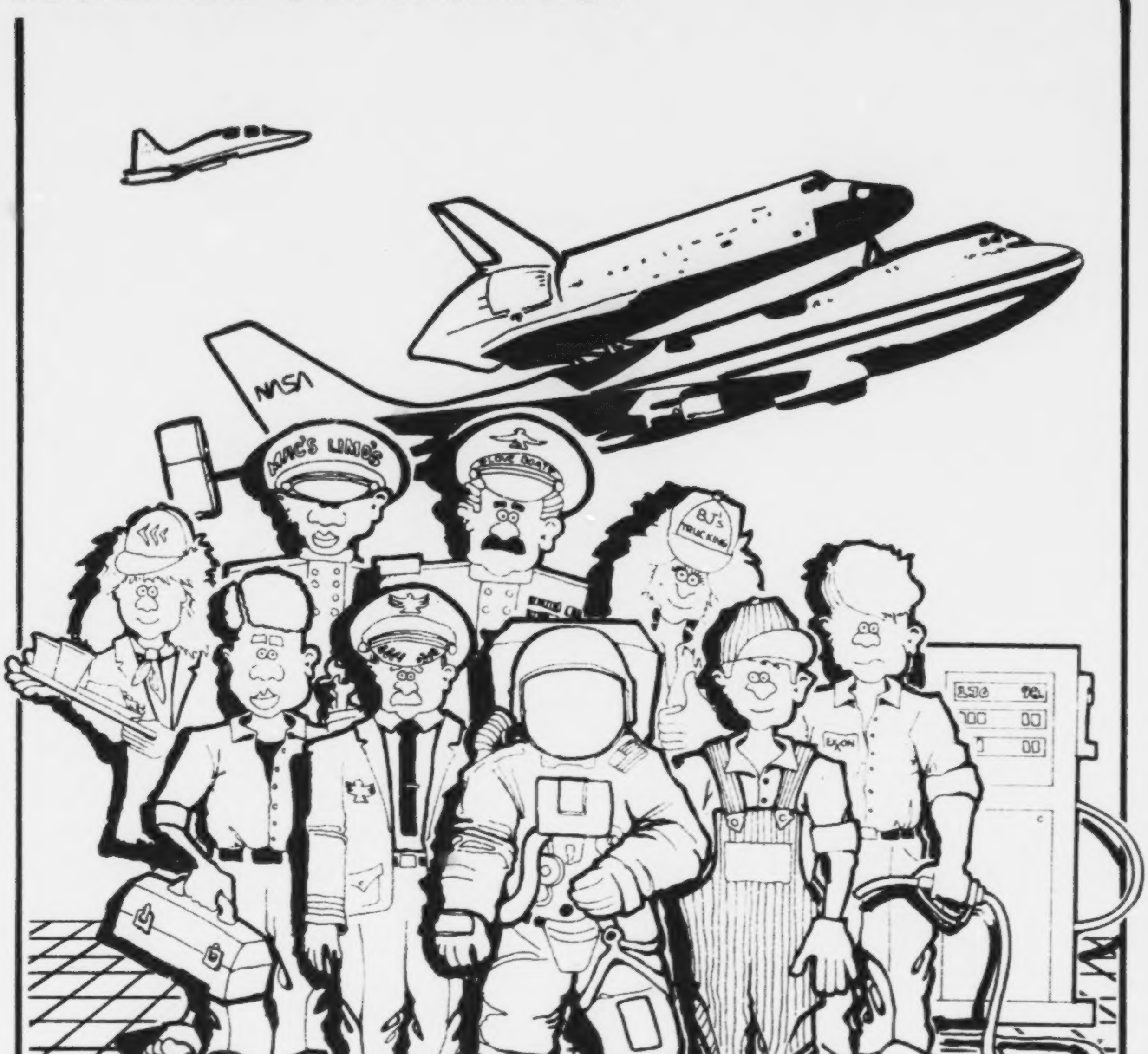
3.

4.

5.

B. Discuss an occupation found in the Public Services cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors. Identify the resource(s) you used to gain this information.

TRANSPORTATION


NASA
MAC'S LIMO'S
LOVE BOAT
BJ's TRUCKING

BEST COPY AVAILABLE

UNIT XVII

TRANSPORTATION
INFORMATION SHEET

I. What Is the Transportation Cluster?

   A. It is a group of occupations involved in transporting people and things from one place to another.

   B. Within the cluster, you can find occupations that can be narrowed further to smaller groups, often called job families.

II. Job Families and Definitions

   A. **Highway Transport**—occupations involved in moving people and things by bus, truck, or taxi

   B. **Rail Transport**—occupations involved in transporting freight and people via the railroads

   C. **Airborne Transport**—occupations involved in flying people and freight to destinations

   D. **Pipeline Transport**—occupations involved in transporting solids and liquids by pipe

   E. **Water Transport**—occupations involved in moving people and goods over the oceans and inland waterways

   F. **Space Transport**—occupations involved in moving people and goods in order to explore space

III. Examples of Occupations

HIGHWAY TRANSPORT

Truck Driver - (D.O.T. 905.663-014) - Drives trucks to transport materials, merchandise, equipment, or people. Workers are classified according to type of truck such as dump-truck driver; tractor-trailer - truck driver; and truck driver (light).

Automobile Mechanic - (D.O.T. 620.261-010) - Repairs and overhauls automobiles, buses, trucks, and other automotive vehicles.

Parking Lot Attendant - (D.O.T. 915.473-010) - Parks automobiles for customers in parking lot or storage garage.

Automobile Service Station Attendant - (D.O.T. 915.467-010)- Services automobiles, buses, trucks, and other automotive vehicle with fuel, lubricants, and accessories.

Taxi Driver - (D.O.T. 913.463-018) - Drives taxicab to transport passengers for a fee. A taxi company may have various support personnel depending on the size of the firm.

Taxicab Starter - (D.O.T. 913.367-010) - Is basically a dispatcher who sends cabs to customers. May answer telephone requests and contact drivers by radio.

Schedule Maker - (D.O.T. 913.167-018) - Prepares schedules for local or long-distance transportation systems, such as bus or streetcar lines.

Supervisor, Cab - (D.O.T. 913.133-014) - Supervises and coordinates activities of workers of taxicab company. May be concerned with general office management.

Instructor, Bus, Trolley, and Taxi - (D.O.T. 919.223-010) - Instructs students in driving buses, trolleys, or taxicabs. Evaluates students' progress. Also instructs in safety procedures.

Bus Driver - (D.O.T. 913.463-010) - Drives bus to transport passengers over specified routes to local or distant places according to a time schedule.

Dispatcher, Bus and Trolley - (D.O.T. 913.167-014) - Routes buses, transit coaches, and trolleys on both urban and long distance routes. Keeps record of movement, location, and schedule of vehicles.

Road Supervisor - (D.O.T. 913.133-010) - Supervises Bus Drivers and coordinates bus schedules to maintain services.

Ticket Agent - (D.O.T. 238.367-026) - Handles the sale of tickets and the planning of simple travel routes for customers.

Porter (Baggage Porter) - (D.O.T. 357.677-010) - Carries baggage for passengers into or from the terminal area. When employed by airlines, may be referred to as skycap.

Superintendent, Maintenance of Equipment - (D.O.T. 184.167-178) - Directs and coordinates activities of workers engaged in servicing and repairing buses or other operating vehicles of bus line.

Traffic Agent - (D.O.T. 252.257-010) - Actively solicits new business, such as group tours or new routes.

Crating and Moving Estimator (D.O.T. 252.357-010) - Solicits freight or storage business from homeowners and business establishments for a trucking firm. Estimates packing, crating, moving, and storage costs.

Dispatcher, Motor Vehicle - (D.O.T. 249.167-014) - Involves some clerical duties, but is mainly concerned with the sending of trucks to various job locations.

Safety Engineer - (D.O.T. 012.061-014) - Concerned with drivers and safety procedures connected with equipment.

Sales Representative, Shipping Services - (D.O.T. 252.357-014) Solicits potential account for parcel delivery firm.

Driver Supervisor - (D.O.T. 909.137-010) - Concerned with the general supervision, conduct, and training of the drivers.

Warehouse Supervisor - (D.O.T. 929.137-018) - Supervises and coordinates activities of workers engaged in loading, unloading, arranging, routing, and delivery of incoming and outgoing freight in a storage warehouse of a motor transportation firm.

Truck Supervisor - (D.O.T. 909.137-018) - Responsible for the trucks in the loading area and must make sure that the trucks are ready to answer schedules.

Checker - (D.O.T. 919.687-010) - Counts and verifies livestock shipped on trucks.

Tracer Clerk - (D.O.T. 241.367-014) - Tracks down lost parcels and crates shipped by motor freight.

RAIL TRANSPORT

Locomotive Engineer - (D.O.T. 910.363-014) - In charge of the actual operation of a locomotive. Operates the machinery, interprets signals, and is responsible for the safe, efficient operation of the train.

Firer, Locomotive - (D.O.T. 910.363-010) - Acts as assistant engineer to the locomotive engineer.

Conductor, Road Freight - (D.O.T. 198.167-018) - A member of the train crew. Ordinarily rides in the caboose, handling communications and paperwork.

Passenger Service Representative II - (D.O.T. 910.677-010) - Stands at gate in railroad or rapid transit station to admit passengers holding tickets or tokens, or at an exit to prevent unauthorized entrance of passengers. May give passengers boarding passes.

Train Clerk - (D.O.T. 219.462-014) - Records time each train arrives or departs from station or terminal.

Brake Coupler, Road Freight - (D.O.T. 910.367-010) - Charged with the duties of coupling, uncoupling, and safety inspection of a train while it is being assembled in the yard area.

Yard Manager - (D.O.T. 184.167-278) - Responsible for operation of the train yard. Supervises other employees working in the yard.

Patroller - (D.O.T. 376.667-018) - Guards, patrols, and polices railroad yards, stations and other facilities to protect company property.

Loading Inspector - (D.O.T. 910.667-018) - Inspects loaded freight cars to ascertain that freight is securely braced and blocked according to loading specifications.

Third Rail Installer - (D.O.T. 825.381-038) - Installs third (power supply) rails on electric elevated or subway railway tracks.

Laborer, Car Barn - (D.O.T. 910.583-010) - Performs various tasks in the storage and maintenance area for streetcars or buses.

Locomotive Inspector - (D.O.T. 622.281-010) - Inspects railroad locomotives in roundhouse or shop to determine extent of wear and needed repairs.

Supervisor, Roundhouse - (D.O.T. 622.131-014) - Supervises the roundhouse and maintenance personnel.

Baggage and Mail Agent - (D.O.T. 910.137-010) - Supervises and coordinates activities of workers engaged in loading and unloading mail and baggage.

Mail Sorter - (D.O.T. 222.687-022) - Sorts mail and parcels in a major train station.

Car Distributor - (D.O.T. 910.367-014) - Concerned with the sending and placing of cars to the place where needed or where an anticipated need is foreseen.

Traffic Agent - (D.O.T. 252.257-010) - Performs analysis on present and future traffic patterns in order for new routes or services to be developed.

Road Supervisor of Engines - (D.O.T. 910.137-034) - In charge of specific information to locomotive crews, such as size of special loads, speed, route, and special stops.

Express Clerk - (D.O.T. 222.367-022) - Receives mail and parcels from customers, computes charges and routes it to destination.

Special Agent - (D.O.T. 372.267-010) - Concentrates on the security of shipments of valuables while in route.

Engine Dispatcher - (D.O.T. 910.367-018) - Assigns engines to locomotive engineers for train runs or for switching operations at railroad yard.

Train Dispatcher - (D.O.T. 184.167-262) - Controls the departure and scheduling of trains.

Station Manager - (D.O.T. 184.167-130) - Directs and coordinates activities of railroad station employees and authorizes departure of trains.

AIRBORNE TRANSPORT

Pilot - (D.O.T. 196.263-014) - Pilots airplane to transport passengers, mail, freight, or for other commercial purposes concerned with the ultimate responsibility for the operation and safety of aircraft. Must be familiar with navigation and engineering capability of the airplane.

Navigator - (D.O.T. 196.167-014) - Locates position and directs course of airplane. Navigates through the use of electronic, optical, and natural aids. Maintains maps and charts to aid pilot in accurate trip planning,

Flight Engineer - (D.O.T. 621.261-018) - Member of the flight crew in charge of in-flight maintenance and operation of power plants and auxiliary machinery. Maintains fuel flow, engine temperatures, and engine speed within acceptable limits.

Airplane-Flight Attendant - (D.O.T. 352.367-010) - Performs a variety of personal services to insure safety and comfort of passengers during flight.

Air Traffic Control Specialist, Tower - (D.O.T. 193.162-018) - Controls air traffic on and within vicinity of airport according to established procedures and policies to prevent collisions and to minimize delays arising from traffic congestion.

Electrician, Airplane - (D.O.T. 825.281-018) - Installs, adjusts, and maintains electrical wiring, switches, and fixture in airplanes.

Reservations Agent - (D.O.T. 238.367-018) - Makes and confirms reservations for passengers on scheduled airline flights.

Ticket Agent - (D.O.T. 238.367-026) - Sells tickets for airline. Duties similar to reservation agent but normally works in the terminal.

Airline Radio Operator - (D.O.T. 193.262-010) - Transmits and receives messages between station and aircraft or other ground stations by radiotelephone.

Instructor, Flying - (D.O.T. 196.223-010) - Instructs student pilots in flight procedures and techniques.

Crew Scheduler - (D.O.T. 215.362-010) - Compiles duty rosters of flight crews and maintains records of crew members' flying time for scheduled airline flights.

Airplane Dispatch Clerk - (D.O.T. 248.367-010) - Compiles flight information to facilitate the movement of aircraft between and through airports.

Weather Clerk - (D.O.T. 248.362-014) - Assembles and distributes weather charts and bulletins to provide data for dispatcher in making flight plans.

Porter - (D.O.T. 357.677-010) - Handles baggage for airline customers at the airport.

Cargo Agent - (D.O.T. 248.367-018) - Routes inbound and outbound air freight shipments to their destination.

Traffic Rate Clerk - (D.O.T. 214.362-038) - Computes the charges for freight and passenger services rendered by the airline.

Airline Radio Operator, Chief - (D.O.T. 193.162-022) - Coordinates activities of airline - radio operators in maintaining radio communications with aircraft and other ground stations.

Airplane Inspector - (D.O.T. 621.261-010) - Examines airframe, engines, and operating equipment to make certain that repairs are made correctly and according to specifications.

PIPELINE TRANSPORT

Coal Pipeline Operator - (D.O.T. 914.362-010) - In charge of the mixing of coal with water so that the solution may be transported by pipeline.

Pipeliner - (D.O.T. 899.684-026) - Maintains and repairs pipelines and pumping stations.

Supervisor, Natural Gas Field Processing - (D.O.T. 549.131-010) - Supervises and coordinates activities of workers who sample and test natural gas.

Supervisor, Dock - (D.O.T. 914.137-018) - Supervises and coordinates activities of workers involved in loading and unloading petroleum products.

Gager - (D.O.T. 914.384-010) - Tests the amount of oil in storage tanks and controls the flow of oil from the well into the pipeline.

Line Walker - (D.O.T. 869.564-010) - Patrols the pipeline on foot or horseback or in a vehicle to detect leaks.

Loading Rack Supervisor - (D.O.T. 914.137-014) - Concerned with the loading and unloading of petroleum trucks and rail tank cars.

Pumper - (D.O.T. 549.360-010) - In charge of various types of pumps. Performs several tasks including general pumping operations, transferring products to and from tank trucks and rail tank cars, pumping oil from wells, and various maintenance activities.

Station Engineer, Main Line - (D.O.T. 914.362-018) - Operates a major pumping terminal to pump and route petroleum products through pipelines.

Dispatcher, Chief - (D.O.T. 184.167-038) - Plans schedules to direct movement of crude oil, petroleum products, natural gas, or coal slurry through pipelines.

Compressor Station Engineer - (D.O.T. 950.382-014) - Operates equipment to control transmission of natural gas through pipelines.

Maintenance Mechanic - (D.O.T. 620.281-046) - Inspects, repairs, and maintains mechanical equipment and machinery used in petroleum exploration and pipeline operations.

Pipeline Supervisor - Supervises work crews engaged in pipeline construction activities, such as clearing pipeline right-of-way, laying pipe, and backfilling ditches.

Supervisor, Field Pipelines - (D.O.T. 914.132-022) - Supervises and coordinates activities of workers conducting, operating, and maintaining oilfield pipeline gathering system.

WATER TRANSPORT

Master, Ship (Ship Captain) - (D.O.T. 197.167-010) - In charge of the operation, administration, and navigation of a ship. The duties of the master involve compliance with safety regulations, company regulations, schedule commitments, and the ultimate responsibility for the ship, its passengers and crew.

Mate, Ship - (D.O.T. 197.133-022) - Supervises and coordinates activities of crew aboard ship.

Engineer - (D.O.T. 197.130-010) - Ship's officer responsible for operation of the power plant and various pieces of machinery aboard ship.

Purser - (D.O.T. 197.167-014) - Coordinates activities of workers aboard ship concerned with shipboard business functions and social activities for passengers.

Pilot, Ship - (D.O.T. 197.133-026) - Commands ships to steer them in and out of a port. Generally an expert on one port and spends entire career guiding ships in and out of one specific port or inland navigable waterway.

Deckhand - (D.O.T. 911.687-022) - Performs combination of duties such as handling lines to move vessel to wharfs; sweeping and washing decks; and lowering and manning lifeboats in case of emergencies aboard watercraft, such as ferryboats, ships, and scows.

Rigger - (D.O.T. 806.261-014) - Makes, installs, and repairs rigging and weight-handling gear on ships to get cargo aboard ship.

Container Coordinator - (D.O.T. 248.367-022) - Expedites movement of cargo containers between ports to insure adequate supply of empty containers for shipper.

Lock Tender, Chief Operator - (D.O.T. 911.131-014) - Supervises and coordinates activities of lock operator to open locks and dams on canal for vessels requiring passage.

Baggage Checker - (D.O.T. 358.677-010) - Directs the handling, storing, and sorting of passenger baggage aboard ship.

Cargo Checker - (D.O.T. 222.367-010) - Compiles records of amount, kind, and condition of cargo loaded on or unloaded from a ship. Records damage to cargo.

Dispatcher, Tugboat - (D.O.T. 911.167-010) - Sends tugboats to guide ships entering or leaving port and to tow barges.

Gear Repairer - (D.O.T. 623. 381-010) - Repairs and, when necessary, builds cargo handling equipment.

Storekeeper - (D.O.T. 222.387-062) - Receives, stores, and issues supplies and equipment.

Supercargo - (D.O.T. 248.167-010) - Plans and coordinates loading and unloading of ships' cargo.

Wharfinger - (D.O.T. 184.387-010) - Compiles reports to ensure that shipping companies are assessed specific harbor fees.

Tonnage Compilation Clerk - (D.O.T. 248.387-014) - Calculates tonnage of ship's cargo to compile a report for use in assessing tariffs.

Ticket Agent - (D.O.T. 238.367-026) - Sells tickets to prospective customers and may help plan trip.

Superintendent, Marine - (D.O.T. 184.167-182) - Manages on-shore activities for company vessels.

SPACE TRANSPORT

This job family has recently been added to the Transportation cluster. Federal and private funding will play an important part in the future of occupations in this job family.

Astronaut - Pilots space vehicle. Responsible for the operation and safety of the aircraft.

Aerospace Physiological Technician - (D.O.T. 199.682-010) - Operates physiological training devices, such as pressure suits, pressure chamber, parasail equipment, and ejection seats, that simulate flying conditions, to indoctrinate flying personnel to physical and physiological stresses encountered in flight. Interviews trainees to obtain physiological and medical histories to detect evidence of disqualifying conditions prior to simulated flight. Moves levers, turns knobs, and presses buttons on control panel to regulate gas and airflow, temperature, and barometric pressure in pressure chamber to simulate flying conditions at varying altitudes and speeds. Operates altitude pressure suit control console which adjusts pressure inside flying suits and helmets. Operates parasail training equipment, such as tow reel, tow truck, radio equipment, and meteorological devices. Adjusts seat, harness, and headrest of ejection tower for safety of personnel.

Aeronautical Engineer - (D.O.T. 002.061-014) - Designs, develops, and tests aircrafts, space vehicles, applying engineering principles and techniques.

UNIT XVII

TRANSPORTATION

ACTIVITY SHEET 1—WORD FIND

Directions: Locate the 15 occupations listed below in the word find. Look across, down, diagonally, and backwards.

```
C F L I G H T E N G I N E E R I L D O C
R I C W O Z E F E O N P I P E L I N E R
C V W O E U T N T O Q O C M X O E B V T
O T R U C K D R I V E R O E T D C I W P
A A I E I T O E C O W T E E W O Q V C S
C X I V C P W O K E O E C O W C O O E C
E I O E X R T K E O O R E S R U P R W R
O D E Q A Z E C T O E C E E O I E V C S
I R E C S W E V A O E I L E W G C O B E
E I D J T L W V G I E L E I A X I L O L
I V W O V T C E E I O E L G Z E D G T O
P E I V C X T E N R D O P O I U T P O T
R R O I U T E N T O P I Y T R E W Q A I
O E C A R G O A G E N T O E I C K M O P
O C S X E T P I L O T I T R Y E X I C V
X E C R V T K R E L C S S E R P X E O P
S R E E N I G N E E V I T O M O C O L C
A S D F G H J I L A S D F G H J I L A S
I B A G G A G E C H E C K E R O L M N B
A I R T R A F F I C C O N T R O L L E R
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Truck driver
Taxi driver
Ticket agent
Locomotive engineer
Patroller
Pilot
Air traffic controller
Porter

Pipeliner
Purser
Express clerk
Flight engineer
Gager
Cargo agent
Baggage checker

UNIT XVII

TRANSPORTATION

ACTIVITY SHEET 2—SUGGESTED ACTIVITIES TO ENSURE MASTERY OF THE ESSENTIAL ELEMENTS DEALING WITH THE CAREER OPPORTUNITIES AREA OF STUDY

The activities mentioned below are suggested to ensure mastery by the student of the following essential elements:

A.	Use the U.S.O.E. fifteen (15) occupational cluster classifications to analyze career opportunities, including new and emerging occupations.	Choose from the activities in supplementary section 1 of this guide.
B.	Demonstrate the ability to use a variety of current labor market information and resources, such as computer software and personal interviews, to analyze career opportunities.	Choose from the activities in supplementary section 2.
C.	Identify resources which provide pertinent information concerning career opportunities, including new and emerging occupations.	Use the occupational report form found in supplementary section 3.
D.	Recognize proper safety standards and hazards associated with the duties of a variety of careers.	
E.	Identify skills that a variety of careers have in common and that are transferable among many careers.	

F. Gain a realistic perception of the world of work by visiting work sites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

G. Identify and apply basic academic skills relevant to the duties of a variety of careers.

H. Exhibit productive work habits and attitudes.

Choose from the activities in supplementary section 4.

The list of examples of occupations classified in the Transportation cluster found in the Information Sheet may be used as a guide for resource people to contact to speak to your class, sources to use for field trips, and films and/or filmstrips which would provide information concerning occupations in this cluster.

UNIT XVII

TRANSPORTATION

ACTIVITY SHEET 3—ACTIVITIES THAT PORTRAY WORK TASKS OF OCCUPATIONS IN THE CLUSTER

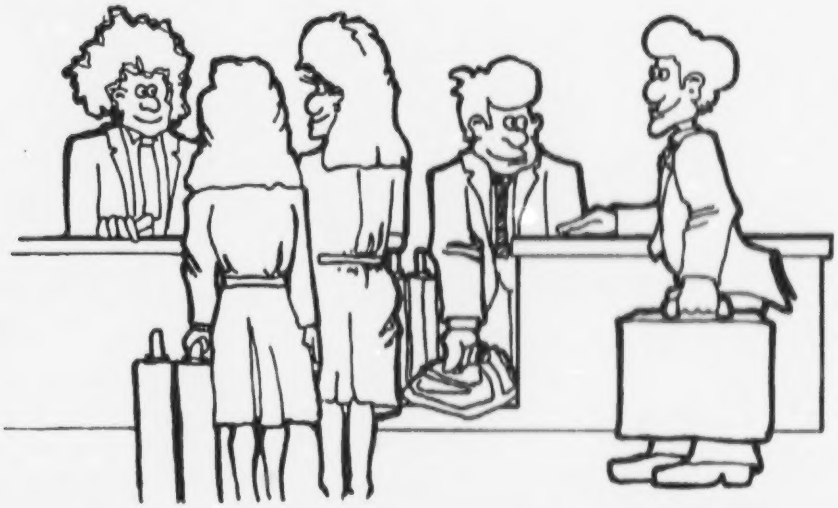
A. Explain that the taxi driver must decide on the best route to take to reach the customer's requested destination.

1. Obtain maps of your city from your Chamber of Commerce.
2. Using the city map, prepare an activity sheet of destinations—for example:

   FROM: 902 Washington

   TO: 1007 Main Street.
3. Have the students describe in writing the best way to travel between locations.

B. Have students prepare a report concerning the steps a passenger traveling by air would take before reaching his/her destination. Include in the report occupations that would be used to assist passengers in reaching their destinations.

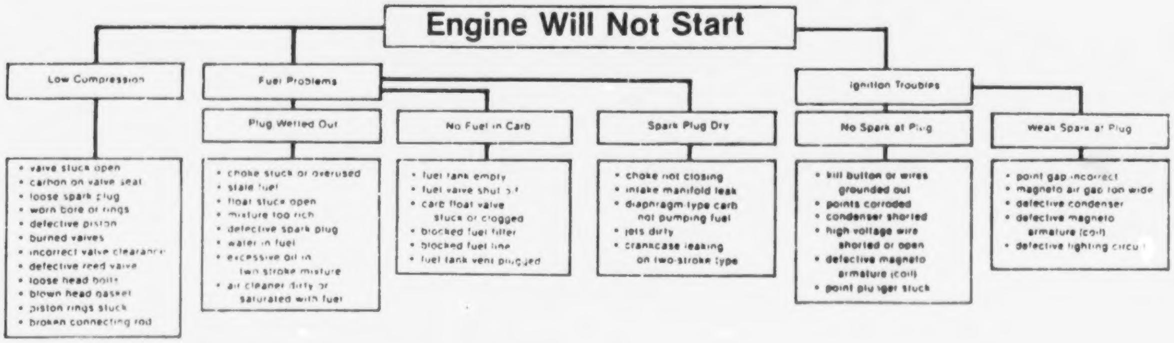


C. Have students bring news clippings concerning space stations and space shuttles to class. Students should circle in red each occupation mentioned.

D. Explain that with many people leaving the rural areas to secure work in the cities, fast and efficient transportation will be very important in the future. Ask students to imagine the transportation needs of the future. The students should present ideas to fulfill these needs. The presentations may be in written form, or students may draw or construct models to illustrate their ideas.

E. Explain that one of the areas in transportation that is growing rapidly is the repair of vehicles involved in transportation. So that students may get an idea of what is involved in making vehicles operational, have the students trace the process needed to run a vehicle (encyclopedias are excellent resources). Visual aids should be used if possible.

Small Engine Troubleshooting Chart


Engine Will Not Start
Low Compression
• valve stuck open
• carbon on valve seat
• loose spark plug
• worn bore or rings
• defective piston
• burned valves
• incorrect valve clearance
• defective reed valve
• loose head bolts
• blown head gasket
• piston rings stuck
• broken connecting rod
Fuel Problems
Plug Wetted Out
• choke stuck or overused
• stale fuel
• float stuck open
• mixture too rich
• defective spark plug
• water in fuel
• excessive oil in two stroke mixture
• air cleaner dirty or saturated with fuel
No Fuel in Carb
• fuel tank empty
• fuel valve shut off
• carb float valve stuck or clogged
• blocked fuel filter
• blocked fuel line
• fuel tank vent plugged
Spark Plug Dry
• choke not closing
• intake manifold leak
• diaphragm-type carb not pumping fuel
• jets dirty
• crankcase leaking on two-stroke type
Ignition Troubles
No Spark at Plug
• kill button or wires grounded out
• points corroded
• condenser shorted
• high voltage wire shorted or open
• defective magneto armature (coil)
• point plunger stuck
Weak Spark at Plug
• point gap incorrect
• magneto air gap too wide
• defective condenser
• defective magneto armature (coil)
• defective lighting circuit

F. The air traffic controller must be able to give instructions that can be understood easily by others and to receive and act on instructions given by others. To assess the students' ability to receive and give instructions, have them complete **ACTIVITY SHEET 3—FOLLOWING INSTRUCTIONS** (page 229) in the *Economic and Societal Factors Instructional Guide*.

G. Even though you may have scheduled a truck driver as a resource person to speak to your class, as a variation to simply asking questions concerning his/her career, have him/her to bring a truck to your school. Students should have an opportunity to ask questions concerning the type of freight carried, weight limitations, distances traveled, etc.

UNIT XVII

TRANSPORTATION
UNIT TEST

A. Name five occupations classified in the Transportation cluster.

1.

2.

3.

4.

5.

B. Discuss an occupation found in the Transportation cluster. List the duties, educational and training requirements, salary, places of employment, outlook, and any other pertinent job-related factors.

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights act is found, the findings are reported to the Officer for Civil Rights, Department of Health, Education, and Welfare.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiations, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.